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1930-1932

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 16th, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

After welcoming the visitors who were present, the PRESIDENT stated that he had the pleasant duty to perform of calling upon Mr. Ayerst Henham Hooker, F.I.C., who had intimated to the Council his desire to present a Silver Mace to the Society to commemorate his attaining his jubilee as a Fellow.

Mr. Hooker stated that after spending nearly fifty years abroad, he had been surprised and gratified to receive shortly after his return to this country a letter from the Council congratulating him on completing his fiftieth year of Fellowship. He had sought some means by which he could manifest his appreciation of the important work accomplished by the Society; chancing to meet Professor Thorpe in his club, he had inquired of him if a Silver Mace would be an acceptable gift, and had been delighted to learn subsequently that his suggestion had been favourably received by the Council. In conclusion, Mr. Hooker said: "And now, Sir, I have the honour to salute you and to ask you on behalf of this distinguished Society to accept from my hands 'This Mace' as an emblem of the authority you so worthily exercise in directing the activities and presiding over the deliberations of this great Society."

In expressing to Mr. Hooker the sincere thanks of the Society for his generous gift, the PRESIDENT stated that the Mace would add to the dignity of the Society and was an appropriate gift in this the ninetieth year of its existence. He mentioned that Mr. Hooker had spent forty-nine years in Egypt, commencing his career there as Chemist in the Customs Administration in 1878. In 1882, Mr. Hooker witnessed the bombardment of Alexandria as Correspondent for the *New York Herald* and the *Morning Post* and was awarded the Medal and Star; from 1883 to 1890 he was engaged in work of great national importance, especially in connexion with the cholera epidemic, for which he obtained the Queen's Gold Medal for Gallantry

and Humanity. In 1891 Mr. Hooker was appointed Director-General of the Salt Monopoly, and when this monopoly was made over to the Egyptian Salt and Soda Company, he became its General Manager. Mr. Hooker left the Khedivial Government's service in 1902, and from 1905 to 1923 was Consul for Norway, receiving the 1st Class Knighthood of St. Olaf. For his services in Egypt Mr. Hooker received the special thanks of Lord Cromer; was promoted to the 2nd Class of the Order of Medjidieh and to the 2nd Class of the Order of Osmanieh, which carries with it the title of Pasha."

"Emergency Hooker," as he was called, because he was always available to Lord Cromer in any emergency, left Egypt in 1926. After his retirement from office, Mr. Hooker devoted his time and energies to the study and development of the country which he had made his home for so many years. Here he endeared himself to all who knew him, and left a record of which he may well be proud.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	*Died.*
William Duncan (Edinburgh) ...	Dec. 3rd, 1896.	Sept. 16th, 1929.
Francis Salsbury Earp	Dec. 1st, 1876.	
Mona Elizabeth Eck	Dec. 2nd, 1926.	Dec. 29th, 1929.
Alfred Edwin Gates	Dec. 5th, 1918.	Oct. 15th, 1929.
John Petty Leather	Dec. 4th, 1902.	Dec. 24th, 1929.
William Frederick Oakfield	June 15th, 1899.	May 19th, 1929.

It was announced, in accordance with the Bye-Laws, that the Members of Council who retire at the Annual General Meeting on March 27th, 1930, are:

President: Prof. J. F. THORPE.

and the following who are not eligible for re-election to the same office until after the lapse of one year:

Vice-President who has filled the Office of President: Prof. H. B. DIXON.

Vice-Presidents who have not filled the Office of President: Prof. G. G. HENDERSON, Prof. A. SMITHELLS.

Ordinary Members of Council:

(*a*) Town Members:

Mr. E. R. BOLTON, Prof. J. C. DRUMMOND, Prof. J. F. SPENCER.

(*b*) Country Members:

Mr. M. P. APPLEBEY, Prof. J. E. COATES, Dr. E. K. RIDEAL.

The following vacant places fall due to be filled at the next Annual General Meeting, in accordance with the Bye-Laws :

President : One vacancy.

Vice-Presidents who have filled the office of President : Two vacancies.

Vice-Presidents who have not filled the office of President : Two vacancies.

Ordinary Members of Council :

(*a*) Town Members (*i.e.* those living within a radius of 50 miles from Charing Cross) : Three vacancies.

(*b*) Country Members (*i.e.* those living beyond a radius of 50 miles from Charing Cross) : Three vacancies.

With respect to the office of President, the Council is of the opinion that owing to the exceptional circumstances arising from the scheme which is about to be launched for the provision of a Central Building to house the Chemical, Mining, and Metallurgical Institutions of the country, everything should be done to maintain uniformity and continuity of effort in the prosecution of the campaign. It considers, therefore, that a change in the office of President this year would be unwise and not in the best interests of the Society. The Council accordingly passed the following resolution on December 19th, 1929, and confirmed it on January 16th, 1930 :

> "That in view of the very important part which Professor J. F. Thorpe has, as President of the Chemical Society, been taking in relation to the scheme for re-housing the Society, and having regard (1) to the importance to the Society of his continuing to represent the Society in the proceedings above referred to with the authority attaching to the office of President, (2) to the continued and probably increased responsibility that will fall upon the representative of the Chemical Society in the further development of the housing scheme, the Council is strongly of opinion that the continuation of Professor Thorpe for another term in the office of President is highly desirable."

The PRESIDENT consented to accept nomination if it were understood that he is at liberty to place his resignation in the hands of the Council after the termination of the first year of the new period of office.

The PRESIDENT read the following section from Bye-Law VI dealing with the manner of nomination for any vacancy among the Officers, Vice-Presidents, or Ordinary Members of Council :

> A nomination for any vacancy among the Officers, Vice-Presidents, or Ordinary Members of Council may be made in

writing signed by at least twenty Fellows, and must be received by the Secretaries at the Society's Rooms not later than the fourteenth day of February. Every nomination must relate to one vacant place only and must be accompanied by a signed declaration by the nominee that he is willing to accept office if elected. Nominations may be made also by the Council.

The following announcements were also made:

1. The Council has resolved to award the Longstaff Medal for 1930 to Dr. William Hobson Mills, F.R.S., of Cambridge, for his distinguished researches in Organic Chemistry especially in its relation to Stereochemistry. The presentation of the medal will be made at the Annual General Meeting on March 27th.
2. Fellows are reminded of the special terms on which they may become subscribers to the Collective Index, 1923—1932, and are urged to send in their applications without delay. The prompt and extensive support of the Fellows is earnestly desired in order that the preparation of the Index may be undertaken at an early date.

The following were formally admitted Fellows of the Chemical Society: D. W. Powell, H. C. Baker, H. H. Hatt, John Farquharson, Arthur W. Morgan, S. E. Boxer, C. R. Wright, E. J. Miller, and Fredk. T. Trustrum.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Hubert Vernon Bettley-Cooke, The Hollies, Minter Street, Canterbury, N.S.W.
Guy Drummond Greville, B.A., Kaye, Woodcote Lane, Purley.
Lena Halpern, A.M., 97, Greencroft Gardens, N.W. 6.
Frank Edward Joselin, B.Sc., A.I.C., Achimota College, P.O. Box 394, Accra, Gold Coast.
Arthur Stuart Clark Lawrence, 41, Halifax Road, Cambridge.
Albert Leonard Lovecy, B.Sc., 37, Tilton Street, Fulham, S.W. 6.
Arthur Kelman Mills, Ph.D., Colliston Manse, Arbroath, Scotland.
Harvey Richard Lyle Streight, M.A., 61, Selly Park Road, Selly Park, Birmingham.
Michael Waloff, 214, Meadvale Road, Ealing, W. 5.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Karl Merck, Goethestrasse 44, Darmstadt, Germany.
Narendranath Mittra, M.Sc., 90, Hewett Road, Allahabad, India
Horace Hall Selby, 3787, California Street, San Diego, California.

The following papers were read :

"The heats of association of acetic and heptoic acids in the vapour state." By MISS T. E. FENTON and W. E. GARNER.

"The variation of phenol coefficients in homologous series of phenols." By C. E. COULTHARD, J. MARSHALL, and F. L. PYMAN.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part XII. Additional experiments on the synthesis of the 1- and 3-methyl derivatives." By C. S. GIBSON and J. D. A. JOHNSON.

"Properties of conjugated compounds. Part IX. The formation of bimolecular reduction products of butadiene acids." By C. M. CAWLEY, J. T. EVANS, and E. H. FARMER.

"The isomerism of the butylideneacetones." By E. N. ECCOTT and R. P. LINSTEAD.

HUGO MULLER LECTURE.

The Hugo Muller Lecture will be delivered by Professor G. von Hevesy on Wednesday, March 26th, 1930 (the day before the Annual General Meeting and Anniversary Dinner). The title of the lecture will be "The Chemistry and Geochemistry of the Titanium Group."

Further particulars will be announced later.

THE 89TH ANNUAL GENERAL MEETING AND ANNIVERSARY DINNER.

The 89th Annual General Meeting will be held on Thursday, March 27th, 1930, at 4 p.m., and the Anniversary Dinner will take place the same evening at the Hotel Victoria, Northumberland Avenue. Further particulars will be circulated later.

JOURNAL OF PHYSICAL CHEMISTRY.

Subscription to the *Journal of Physical Chemistry* for 1930 should be sent to Mr. W. W. Buffum, *The Journal of Physical Chemistry*, 654, Madison Avenue, New York City, U.S.A., instead of to the Baker Laboratory of Chemistry, Ithaca, New York, U.S.A.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS FIFTIETH ANNIVERSARY CELEBRATIONS.

The celebrations of the Fiftieth Anniversary of the American Society of Mechanical Engineers will be held in New York City, Hoboken, and Washington, from April 5th to 9th, 1930. Fellows of the Society resident in the vicinity are invited to attend the meetings and those desiring to do so should notify the Secretary, 29, West Thirty-ninth Street, New York City, U.S.A.

List of papers, or abstracts thereof, received between December 19th, 1929, and January 16th, 1930. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Mobile anion tautomerism. Part IV. The stability of some α- and γ-alkylallyl alcohols and their esters. 2 : 4-Dimethylcinnamyl alcohol." By H. BURTON.

"The properties of the chlorides of sulphur. Part III. Dielectric constants." By T. M. LOWRY and G. JESSOP.

"The properties of the chlorides of sulphur. Part IV. Density and surface tension." By T. M. LOWRY and G. JESSOP.

"The 3-halogeno-6-nitro- and the 3-halogeno-6-amino-dimethylanilines." By H. H. HODGSON and A. KERSHAW.

"4-Sulpho 3-hydroxybenzoic acid." By M. S. SHAH.

"Some trinitroethylbenzenes." By J. N. E. DAY.

"Colloidal phenoxides. Part II. Some phenanthraxanthones." By W. BAKER.

"Synthesis of alkyl naphthalenes. Part I. 1-Methyl-7-ethylnaphthalenes." By J. HARVEY, I. M. HEILBRON, and D. G. WILKINSON, and "Part II. 1-Methyl-6-ethylnaphthalene and 1-methyl-5-ethylnaphthalene." By I. M. HEILBRON and D. G. WILKINSON.

"*N*-Acylpyrazolones as acylating agents." By J. S. AGGARWAL and J. N. RAY.

"The photochemical interaction of acetaldehyde and oxygen." By E. J. BOWEN and E. L. TIETZ.

"Photomicrographic methods applied to two-component salt mixtures." By W. M. MADGIN.

"The catalytic hydrogenation of different types of unsaturated compounds. Part V. The hydrogenation of cyclic ethylenic derivatives and of their mixtures." By S. V. LEBEDEV and M. PLATONOV.

"Extinction of methane flames by water vapour." By H. F. COWARD and J. J. GLEADALL.

"The polarity of acid chlorides." By W. J. DEVERALL and H. W. WEBB.

"Some chemical properties of aluminium." By N. F. BUDGEN.

"Investigations on the bivalency of carbon. Part III. Some experiments on xanthhydrol, dixanthhydryl ether, and xanthhydryl chloride." By F. G. KNY-JONES and A. N. WARD.

"The unsaturation and tautomeric mobility of heterocyclic derivatives. Part II. The aromatic nature of the heterocyclic nucleus in α-naphthathiazole and the synthesis of a derivative of γ-naphthathiazole." By R. F. HUNTER and J. W. T. JONES.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 20th, 1930.

ANDERSON, JOHN STUART, 42, Grosvenor Road, Highbury, N. 5. British. B.Sc., A.R.C.S., D.I.C. (Imperial College of Science, London). Research Student. (*Signed by*) H. B. Baker, A. A. Eldridge, R. H. Purcell.

BETTLEY-COOKE, HUBERT VERNON, "The Hollies," Minter Street, Canterbury, N.S.W., Australia. British. Chemist. Associate Australian Chemical Institute. Senior Chemist Dyes & Chemicals, Ltd., agents for I.G. Farbinindustrie. (*Signed by*) A. D. Ollé, R. Grant, R. W. Challinor.

BRECHIN, THOMAS STEWART, c/o Miller & Co., Chemists, Kandy, Ceylon. British. Dispensing Chemist. Pharmaceutical Chemist, England. Examination passed, April 7th, 1909. Certificate No. 17534. (*Signed by*) Wm. H. Saunders, George Dalrymple, H. Humphreys Jones, J. W. Clayton.

CHEESMAN, GEOFFREY HERBERT, 9, Compton Road, Wimbledon, S.W. 19. British. B.Sc. (Lond.); A.R.C.S. (*Signed by*) H. B. Baker, James C. Philip, H. L. Riley.

COLLIER, KATHLEEN MARY, 85, Worple Road, Wimbledon, S.W. 19. British. Assistant Science Mistress at Bedford High School. At present a Postgraduate Student at Imperial College of Science and Technology. (*Signed by*) M. A. Whiteley, James C. Philip, H. L. Riley.

CORDINGLEY, HAROLD, Hawksworth Avenue, Guiseley, nr. Leeds. British. Research Student. B.Sc. (Leeds), Hons. Chem. (*Signed by*) C. K. Ingold, J. W. Baker, H. Burton.

COSTIGAN, HOWARD AUGUSTUS, 280, Wellington Road North, Heaton Chapel, Stockport. English. Head of Department (Chemistry and Physics), Stockport College. B.Sc., 1st Class Hons., 1st Division, School of Chemistry, July 1922; Ph.D. (Liverpool University). Two years' research under Prof. Baly, F.R.S., on "Refractive Index and Chemical Constitution," Dec. 1924. Hon. Scholar, Liverpool University, 1922. Teacher in Primary, Secondary, and Technical Schools during the past eighteen years. Now Lecturer, with duties of Head of Department, in Chem. and Physics, at Stockport College, appointed as from Sept. 1, 1927. Desirous of keeping in touch, conveniently, with developments in chemistry, and of availing myself of the Society's facilities. (*Signed by*) R. A. Morton, R. O. Griffith, A. McKeown.

DAVIES, JOHN MALCOLM, 33, Boverton Street, Cardiff, S. Wales. British. Acting Head, Department of Pharmaceutics, Cardiff Technical College. Pharmaceutical Chemist. Lecturer in Pharmacy and Pharmaceutical Chemistry. (*Signed by*) F. W. Hodges, E. A. W. Hebdon, Ernest A. Rudge.

DOJA, MOHAMMAD QAMRUD, Doja Buildings, P.O. Bankipore, Patna, India. Indian. Research Student. B.A. (Cambridge); B.Sc. (Patna). (*Signed by*) W. J. Pope, W. H. Mills, R. G. W. Norrish.

ELLIS, CECIL PHILIP, School for Sons of Chiefs, Bo, Protectorate of Sierra Leone, West Africa. British. Teaching (Colonial Civil Service). B.Sc. London (2nd Class Hons. Chem.); A.I.C. Science Master, Bo School, Sierra Leone. (*Signed by*) S. Sugden, George W. Ferguson, W. Solomon.

FISHER, NELLIE IVY, 127, Wellesley Road, Ilford, E. British. Research Chemist. A.R.C.S.; B.Sc., Imperial College of Science and Technology, South Kensington. Student at the Imperial College of Science and Technology (one year's research). Research Assistant to Dr. F. M. Hamer at the Research Laboratories of the Photographic Plates & Papers, Ltd. Riley and Fisher, *J.C.S.*, 1929, 2006. (*Signed by*) H. L. Riley, F. M. Hamer, H. Baines.

FRASER, HUGH BOUVARD, 32, Lansdowne Crescent, Holland Park, London, W. 11. British. Research Student. B.Sc. (Edinburgh). Organic Chemistry Research at the Imperial College of Science and Technology, South Kensington. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

FUSEYA, GIICHIRO, Kogakubu, Tohoku Imperial University, Sendai, Japan. Japanese. Professor of Applied Electrochemistry, Tohoku Imperial University. Publication: "The Common Properties of Addition Agents in Electrodeposition," *Trans. Amer. Electrochem. Soc.*, 1926; "Addition Agents in Electrodeposition, II," *ibid.*, 1927. (*Signed by*) Riko Magima, Hiroshi Nomura, Sin-iti Kawai.

GADDIE, ROBERT, "Laguna," Eakbank, Dalkeith, Midlothian. Scottish. Assistant in the Dept. of Therapeutics, University of Edinburgh. B.Sc., Edinburgh. I am at present carrying out research and wish to keep in touch with the developments in chemistry. (*Signed by*) George Barger, C. P. Stewart, Edgar Stedman.

GREVILLE, GUY DRUMMOND, Kaye, Woodcote Lane, Purley, Surrey. British. Analytical and Research Chemist, Crookes' Laboratories. B.A. (Cantab.), Parts I and II, Natural Sciences Tripos (1st Class). (*Signed by*) Frank Dickens, Wilfrid Lawson, H. E. F. Notton.

HALPERN, LENA, 97, Greencroft Gardens, N.W. 6. American. Student (Research). A.B., Hunter College, New York City; A.M., Columbia University, N.Y.C. 1926–1929, Research Assistant, N.Y. Post-Graduate Medical School and Hospital. (*Signed by*) F. G. Donnan, K. N. Menon, K. R. Krishnaswami.

HEWSON, GEORGE CHRISTOPHER, Arran Street, Ballina, Co. Mayo. British. Pharmaceutical Chemist. L.P.S.I. (1st place honours in all subjects). Examiner to the Pharmaceutical Society of Ireland in Botany and Materia Medica. (*Signed by*) G. Clifford Riley, Ian C. P. Smith, P. J. Thompson.

HEY, LESLIE, 11, Sholebroke Place, Chapeltown, Leeds. British. Research Student. B.Sc. (Chem. Hons., 2nd Class), Leeds. (*Signed by*) C. K. Ingold, H. Burton, J. W. Baker.

HUNTER, JOHN, 17, Brunswick Road, Withington, Manchester. British. Teacher. B.Sc. (London); A.I.C. Science Master, South Manchester School. Joint author of paper on "The Reaction between Bromine and Sodium Formate in Aqueous Solution" in School Science Review, December 1929. At present engaged in research on Ternary Liquid Mixtures. Some-

time Research Assistant and Assistant Works Chemist for Messrs. Spencer, Chapman & Messel, Ltd., Silvertown, E. (*Signed by*) J. R. Partington, A. Robertson, D. C. Jones, John K. Wood.

JOSELIN, FRANK EDWARD, 86, Pendle Road, Streatham, S.W. 16. British. Science Master, Achimota College, Gold Coast. B.Sc., London. Associate of the Institute of Chemistry. Associate of the City and Guilds, Finsbury College. From 1925 to Dec. 31, 1929, Chemist to the British Electrical Federation, Ltd. (*Signed by*) R. Leslie Collett, George Senter, Samuel Sugden.

KONDO, HEIZABURO, Pharmaceutical Institute, Imperial University, Tokio. Japanese. Professor of Chemistry. Professor Kondo has made many contributions to the original literature and is distinguished as teacher and investigator. (*Signed by*) Robert Robinson, S. Sugasawa, O. L. Brady.

LAMONT, FRANCIS GEORGE, 81, St. George's Road, Victoria, S.W. 1. British. Research Student at Royal College of Science. B.Sc. (Hons.) and M.Sc., Queen's University, Belfast. (*Signed by*) C. S. Gibson, John D. Johnson, William A. Bone.

LAWRENCE, ARTHUR STUART CLARK, 41, Halifax Road, Cambridge. English. Chemist. Research worker, Dept. of Physical Chemistry, Cambridge. Formerly Junior Chemical Assistant at the Royal Institution to the late Sir James Dewar and to Sir William Bragg. Author of "Soap Films" (Bell, 1929). Paper on "Soap Films and Colloidal Behaviour" in *J. Phys. Chem.*, in press; also one on "Separation of Soaps from Solution" in *Kolloid Zeitschrift*, in press. (*Signed by*) Henry E. Armstrong, W. H. Bragg, Eric K. Rideal.

LETON, ERNEST, 60, Brondesbury Park, N.W. 6. British. Research Student. Diplôme d'Ingénieur-Chimiste, University of Lausanne, Switzerland. Organic Chemistry Research at the Imperial College of Science, South Kensington. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

LOVECY, ALBERT LEONARD, 37, Tilton Street, Fulham, S.W. 6. British. Research Chemist. B.Sc., University of London. Employed at Research Department, Royal Arsenal, Woolwich. Late student at University College, London. (*Signed by*) W. W. Jones, T. E. Ellison, P. W. B. Harrison.

MILLS, ARTHUR KELMAN, Colliston Manse, Arbroath, Scotland. Scottish. Rockefeller Research Fellow. B.Sc., Ph.D. (St. Andrews). Carnegie Scholar, 1927–29. Rockefeller Research Fellow, 1929. Publications: *Ber.*, 1929, **62**, 284, 1784. (*Signed by*) Alex. McKenzie, Isobel A. Smith, Robert Roger, John D. M. Ross.

MILLS, JAMES EDWARD, 164, Willesden Lane, N.W. 6. British. Research Student at University College. M.Sc. (Queensland University). 1851 Exhibition Research Scholarship. (*Signed by*) F. G. Donnan, S. Barratt, W. Rogie Angus.

MORISON, CECIL GRAHAM TRAQUAIR, Pinsgrove, Hinksey Hill, Oxford. British. University Reader in Agricultural Chemistry. Student of Christ Church, Oxford. M.A. (Oxon.). (*Signed by*) N. V. Sidgwick, R. T. Lattey, E. Hope, Frederick M. Brewer, C. J. Virden, D. Ll. Hammick.

MOSALLAM, SAYED, Sedfa, Eldwair, Egypt. Egyptian. Chemistry Lecturer, Egyptian University, Cairo. B.Sc. (Hons.), Manchester, 1926. (*Signed by*) R. S. Cahn, D. H. Bangham, A. I. Kahil, A. K. Wahbi.

ODELL, MARJORIE WINIFRED, 67, Marlowes, Hemel Hempstead, Herts. British. Chemistry Mistress at Barr's Hill School, Coventry. B.Sc. and A.R.C.S., Royal College of Science. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, R. P. Linstead.

PRAAGH, GORDON VAN, 15, Langland Gardens, Hampstead, N.W. 3. British. Research Student, Laboratory of Physical Chemistry, Cambridge. B.Sc., London. Graduated University of London, 1st Class Honours, 1928, Session 1928–29. Engaged in Research at University College, London, and at present at Laboratory of Physical Chemistry, Cambridge. (*Signed by*) T. M. Lowry, Eric K. Rideal, Gwyn Williams.

RAMSDEN, ELSIE, Lyddon Hall, Virginia Road, Leeds. English. Research Student. B.Sc., Hons. Chemistry, Leeds. Research Student in the University of Leeds. (*Signed by*) H. Burton, C. K. Ingold, C. W. Shoppee.

ROBERTSON, GEORGE ALEXANDER, 146, Holland Street, Glasgow. British. Research Chemist. Since qualifying ten years ago, I have been employed mainly on research. (*Signed by*) R. S. Cahill, S. Ellingworth, Henry Worth.

ROBINSON, EDMUND BRODIE, "Van Ryn," Glencroft Terrace, Darlington. British. Teacher. B.Sc., Sp. (Lond.), A.I.C. Student, four years' Honours Chemistry Course. Teacher, Day and Night School. Desire to keep in touch with the advance of Chemistry. (*Signed by*) G. R. Clemo, Richard Raper, P. L. Robinson, R. D. Haworth, L. A. Sayce.

SCHALIT, ROSA, 41, Eton Avenue, N.W. 3. British. Student. A.R.C.S., B.Sc., at Royal College of Science. To obtain the Society's publications and to attend the meetings. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, R. P. Linstead.

SHEPHERD, FLORENCE MARY ELLALINE, 54, Craignair Road, Tulse Hill, S.W. 2. British. Assistant Research Chemist. B.Sc., Chemistry Honours (London), Class I; M.Sc., Chemistry (London). Assistant Lecturer and Demonstrator in Chemistry, Royal Holloway College, 1925–28. Junior Assistant Chemist at H.M. Fuel Research Station, 1928–. (*Signed by*) A. B. Manning, T. S. Moore, M. Boyle.

STREIGHT, HARVEY RICHARD LYLE, 61, Selly Park Road, Selly Park, Birmingham, England. Canadian (British). Student. B.A., 1927 (with First Class Honours); M.A., 1929; both at University of British Columbia, Vancouver, Canada. Investigator: "The Electrolysis of Cyanogen Halides," R. H. Clark and H. R. L. Streight, *Trans. Roy. Soc. Canada*, 3, XXII, 323, 1928. Investigator and Author: "Cathodic Halogen—Electrolysis of Halogenyl Amides," Streight and Hallonguist, *J. Amer. Electro. Chem. Soc.*, 1929. Investigator: "A Systematic Study of the Preparation of Alkyl Chlorides," Clark and Streight, *Trans. Roy. Soc. Canada*, 1929. Assistant, Dept. of Chemistry, University of British Columbia, 1927–29 (two years inclusive). At present holder of an 1851 Exhibition Scholarship, representing Canada, at University of Birmingham. (*Signed by*) W. N. Haworth, S. R. Carter, Wm. Wardlaw, E. L. Hirst.

TOWERS, ALBERT, 9, Cambridge Street, Guiseley, Leeds. British. Grammar School Master. M.Sc. (Leeds University). Student, Leeds University, 1922–26. Assistant Chemistry Master, Urmston Grammar School, 1928. (*Signed by*) C. K. Ingold, J. W. Baker, C. W. Shoppee.

ULLAH, SYED ANWAR, c/o S. A. Manzar, Esq., B.A., Barrister-at-law, Patna, B. & O., India. Indian (British subject by birth). Student (Research). B.Sc. from Aligarh Muslim University, Aligarh, U.P., India. Student Demonstrator at Aligarh Muslim University, Aligarh, 1927–29. Research Student at the University College, London. (*Signed by*) F. G. Donnan, Bryan Topley, S. Barratt.

WALOFF, MICHAEL, 214, Meadvale Road, Ealing, W. 5. Russian. Clerk. Final B.Sc. Student (Chemistry) at Birkbeck College. (*Signed by*) S. Sugden, F. H. Burstall, George W. Ferguson.

WHALLEY, HAROLD KENNETH, Pembroke College, Cambridge. English. Research Student in Physical Chemistry. B.A. (Cambridge); B.Sc. (London). Scholar of Pembroke College. (*Signed by*) Eric K. Rideal, N. P. McCleland, T. M. Lowry.

WILLIAMS, ALBERT EDWARD, 38, Cavendish Road, Chorlton-cum-Hardy, Manchester. British. Analytical and Works Chemist. Two years as Assistant Chemist to The Comet Chemical Co., Ltd., Stalybridge, Cheshire. One year as Chemist to the British Union Lamp Works, Ltd., Huyton, Liverpool. One year as Chemist to The Birmingham Starch Co., Ltd., Wellhead Works, Perry Barr, Birmingham. Seven years as Works Chemist to The Southern Oil Co., Ltd., Trafford Park, Manchester. I am also a Fellow of the Royal Society of Arts (London). (*Signed by*) J. W. Mellor, T. P. Hilditch, E. F. Armstrong.

WOLFENDEN, JOHN HULTON, Exeter College, Oxford. British. Teacher of Chemistry. M.A. (Oxon.); M.A. (Princeton). Fellow and Tutor in Chemistry, Exeter College, Oxford. (*Signed by*) H. B. Hartley, E. J. Bowen, C. N. Hinshelwood.

WYMAN, BERNARD, c/o Brunner, Mond & Co., Winnington Works, Northwich, Cheshire. English. Librarian. B.A., Cambridge. Technical Librarian for Brunner, Mond & Co. (*Signed by*) F. Leslie Clark, W. R. H. Hurtley, H. M. Spittle.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2):

MERCK, KARL, Darmstadt, Germany, Goethestrasse 44. German. Partner of the Chemical Works E. Merck, Darmstadt. Dr. rer. nat. at Strassburg, 1912. *Liebigs Annalen*, 1918, Bd. 415, Thiele and Merck, "Kondensation von Inden mit Ketonen." (*Signed by*) Jocelyn Thorpe.

MITTRA, NARENDRANATH, 90, Hewett Road, Allahabad City, U.P., India. Indian. Chemist, Medical Department, East Indian Railway (State Railway). M.Sc., Allahabad University, Allahabad. Papers contributed: (1) "On Induced Oxidations," Mittra and Dhar, *Trans. Faraday Soc.*, **17**, 676 (1922). (2) "On Induced Reactions and their Analogy in Animal Bodies," *Z. Anorg. Chem.*, **122**, 146 (1922). (3) "Induced Reactions and Diabetes from the Viewpoint of Induced Oxidation," *Journ. Phys. Chem.*, Vol. XXIX, pp. 376–394, April 1925. (4) "Experiments on Hemolysis," Sen and Mittra, *J.I.C.S.*, V, issue 6, 1928; **6**, issue 2, 1929; **6**, issue 1, 1929; and *Ind. Journ. Med. Research*, **17**, No. 1, July 1929. A.I.C. (*Signed by*) N. R. Dhar, K. P. Chatterjee.

SELBY, HORACE HALL, 3787, California Street, San Diego, California, U.S.A. American. Chemist. Private Analytical Laboratory, 1921–24. Student of Chemistry, University of Wyoming, 1924–25. Chief Chemist, Hage's Ice Cream Co., San Diego, 1926–. 2nd Lt., Chem. Warfare Service, 1927–. (*Signed by*) William A. Bush.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

COFMAN, VICTOR. Les colloïdes traités au point de vue de la biophysique et de la thermodynamique. Nancy 1929. pp. 87. ill. (*Recd.* 17/12/29.) From the Author.

INDIAN LAC ASSOCIATION FOR RESEARCH. Reports of the Committee and of the Director . . . for the year 1st April 1927 to 31st March 1928, etc. Calcutta 1928 +. (*Reference.*) From the Director.

ISABEY, JEAN. Cours de chimie. Paris 1930. pp. iv + 395. ill. 70 *fr.* (*Recd.* 6/1/30.) From the Publishers: MM. Gauthier-Villars et Cie.

OSBORN, ALBERT S. Questioned documents. 2nd edition. Albany, N.Y. 1929. pp. xxiv + 1028. ill. 55*s.* net. (*Recd.* 9/1/30.) From the Author.

PALMÆR, WILH. The corrosion of metals. Part I. General theory. (*Ingeniörsvetenskapsakademiens Handlingar* No. 93.) Stockholm 1929. pp. 347. ill. *Kr.* 20. (*Recd.* 11/1/30.)

PAULI, WOLFGANG, and VALKÓ, EMERICH. Elektrochemie der Kolloide. Wien 1929. pp. xii + 647. ill. *M.* 66. (*Recd.* 23/12/29.) From Mr. E. Hatschek.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Water Pollution Research.* Summary of Current Literature. Vol. III, etc. London 1930 +. (*Reference.*) From the Director.

[SOCIETE DE CHIMIE INDUSTRIELLE.] La grande œuvre de la chimie. Paris 1929. pp. 250. ill. 35 *fr.* (*Recd.* 21/11/29.)

SÖDERBAUM, HENRIK GUSTAV. Jac. Berzelius. Levnadsteckning. 2 vols. Uppsala 1929. pp. x + 548 + 32, viii + 540 + 14. ill. (*Recd.* 30/12/29.) From the K. Svenska Vetenskapsakademien.

STAMBERGER, PAUL. The colloid chemistry of rubber. London 1929. pp. vi + 80. ill. 6*s.* net. (*Recd.* 20/12/29.) From the Academic Registrar, University of London.

WILD, A. MARTIN DE. The scientific examination of pictures: an investigation of the pigments used by the Dutch and Flemish masters. Translated from the Dutch by L. C. JACKSON. London 1929. pp. xvi + 106. ill. 15*s.* net. (*Recd.* 30/12/29.)

II. *By Purchase.*

ABRAHAM, HERBERT. Asphalts and allied substances: their occurrence, modes of production, uses in the arts and methods of testing. 3rd edition. New York 1929. pp. xviii + 891. ill. 42*s.* net. (*Recd.* 23/12/29.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 6th, 1930, at 8 p.m., Professor H. B. BAKER, C.B.E., D.Sc., F.R.S., Vice-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death on January 18th, of Henry Wilson Hake, who was elected a Fellow of the Society on January 20th, 1876.

The following were formally admitted Fellows of the Chemical Society: Dorothy L. Fox, Elizabeth E. J. Marler, F. S. H. Head, F. H. Curd, W. Solomon, R. Winstanley Lunt, C. E. Duce.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Edmund David Patrick Barkworth, B.A., Flat 2, 4, Colville Square, W. 11.
Reginald Henry Coysh, M.Sc., 7, Cannon Close, Raynes Park, S.W. 20.
Louis Robert Hickson, B.Sc., A.I.C., 19, The Cambridge Road, N. 17.
Arthur William Middleton, B.Sc., 27, St. Bernard's Road, East Ham, E. 6.
Margaret Mary Murray, M.Sc., 42, Wilton Crescent, Wimbledon, S.W. 19.
Walter Frederick Thorne, B.Sc., 4, Langley Road, Branksome, Bournemouth.
Alfred Harold Whitaker, 131, Holmleigh Road, Stamford Hill, N. 16.
Robert David Williams, M.Sc., The Paint Research Station, Teddington, Middlesex.

The following papers were read:

"The photolysis of aqueous hydrogen peroxide solutions. Part I. Experimental methods." By A. J. ALLMAND and D. W. G. STYLE.

"The photolysis of aqueous hydrogen peroxide solutions. Part II. Experimental results." By A. J. ALLMAND and D. W. G. STYLE.

"The scission of diaryl ethers and related compounds by means of piperidine. Part III. The nitration of 2 : 4-dibromo-2′ : 4′-dinitrodiphenyl ether and of 2 : 4-dibromophenyl *p*-toluenesulphonate and benzoate. The chlorination and bromination of *m*-nitrophenol." By R. V. HENLEY and E. E. TURNER.

"The action of phenyldiazonium chloride on 2-nitroethanol and its derivatives." By E. C. S. JONES and J. KENNER.

Ordinary Scientific Meeting, Thursday, February 20th, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on February 19th, of Mr. Hugh Chester Bell, who was elected a Fellow on December 15th, 1921.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Ivor Lloyd, 8a, Chip Street, Clapham, S.W. 4.
William Dales Oldham, 22, Edenhall Avenue, Levenshulme, Manchester.
William Edward Raybould, B.Sc., A.I.C., 30, Station Street, Sutton Coldfield, Birmingham.
Frederic Eric Tomkinson, M.A., B.Sc., Eirianfa, St. Asaph, Flintshire.
Eric Walton, M.Sc., Ph.D., 15, Avenue Gardens, Teddington, Middlesex.
Eric Ernest Thomas Young, Elmhurst, Lonsdale Place, Derby.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Paul Borg, Office of Agriculture, Malta.
R. Chester Roberts, M.A., B.S., Colgate University, Hamilton, N.Y., U.S.A.
Vinayak Yeshwant Shewade, B.Sc., 80, Ada Bazar, Indore, Central India.

Miss Z. Kamil and Dr. E. H. Farmer were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

John Stuart Anderson, B.Sc., A.R.C.S., D.I.C.
Hubert Vernon Bettley-Cooke.
Thomas Stewart Brechin.
Geoffrey Herbert Cheesman, B.Sc., A.R.C.S.
Kathleen Mary Collier.
Harold Cordingley, B.Sc.
Howard Augustus Costigan, B.Sc., Ph.D.
John Malcolm Davies.
Mohammad Qamrud Doja, B.A., B.Sc.
Cecil Philip Ellis, B.Sc., A.I.C.
Nellie Ivy Fisher, B.Sc., A.R.C.S.
Hugh Bouvard Fraser, B.Sc.
Giichiro Fuseya.
Robert Gaddie, B.Sc.
Guy Drummond Greville, B.A.
Lena Halpern, A.M.
George Christopher Hewson.
Leslie Hey, B.Sc.
John Hunter, B.Sc., A.I.C.
Frank Edward Joselin, B.Sc.
Heizaburo Kondo.
Francis George Lamont, M.Sc.
Arthur Stuart Clark Lawrence.
Ernest Leton.
Albert Leonard Lovecy, B.Sc.
Karl Merck.
Arthur Kelman Mills, Ph.D.
James Edward Mills, M.Sc.
Narendranath Mittra, M.Sc.
Cecil Graham Traquair Morison, M.A.
Sayed Mosallam, B.Sc.
Marjorie Winifred Odell, B.Sc., A.R.C.S.
Gordon van Praagh, B.Sc.
Elsie Ramsden, B.Sc.
George Alexander Robertson.
Edmund Brodie Robinson, B.Sc., A.I.C.
Rosa Schalit, B.Sc., A.R.C.S.
Horace Hall Selby.

Florence Mary Ellaline Shepherd, M.Sc.
Harvey Richard Lyle Streight, M.A.
Albert Towers, M.Sc.
Syed Anwar Ullah, B.Sc.
Michael Waloff.
Harold Kenneth Whalley, B.A., B.Sc.
Albert Edward Williams.
John Hulton Wolfenden, M.A.
Bernard Wyman, B.A.

The following papers were read :

"Trypanocidal action and chemical constitution. Part IX. Aromatic arsinic acids containing an amide group." By G. A. C. GOUGH and H. KING.

"The properties of the chlorides of sulphur. Part III. Dielectric constants." By T. M. LOWRY and G. JESSOP.

"The properties of the chlorides of sulphur. Part IV. Density and surface tension." By T. M. LOWRY and G. JESSOP.

"Strychnine and brucine. Part X. The degradation of dinitrostrycholcarboxylic acid; its recognition as a derivative of quinoline and the consequent modification of the constitutional formulæ for the strychnos bases proposed in Part VII." By K. N. MENON, (the late) W. H. PERKIN, jun., and R. ROBINSON.

THE HUGO MÜLLER LECTURE.

The Hugo Müller Lecture entitled "The Chemistry and Geochemistry of the Titanium Group" will be delivered by Professor Dr. G. von Hevesy at the Salters' Hall, St. Swithin's Lane, E.C. 4, on Wednesday, March 26th, at 5.30 p.m. (by kind permission of the Court of the Salters' Company). Tickets of admission will not be required.

89TH ANNUAL GENERAL MEETING.

The Annual General Meeting will be held at Burlington House, on Thursday, March 27th, 1930, at 4 p.m., when the President will deliver his Address.

ANNIVERSARY DINNER.

The Anniversary Dinner of the Society will be held at the Hotel Victoria, Edward VII Rooms, Northumberland Avenue, W.C. 2, on Thursday, March 27th, 1930 (the day of the Annual General Meeting), at 7 for 7.30 p.m.

The price of the tickets will be Twelve Shillings and Sixpence (12*s.* 6*d.*) each, including gratuities to waiters.

Tickets can be obtained from the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, London, W. 1, and a remit-

tance for the number of tickets required, made payable to Mr. S. E. Carr, must accompany each application. Application should be made as soon as possible.

RAILWAY FACILITIES.

The Railway Companies have granted facilities by which those attending the meetings on March 26th and 27th will be able to travel from all parts of the country to London at the reduced rate of an ordinary single fare and one-third for the double journey, *provided that not less than* 100 *persons avail themselves of this privilege.* No minimum distance is fixed, and the facilities apply to all the Railway Companies in Great Britain except the Metropolitan, Metropolitan District and London Electric Railways. Tickets will be available from March 25th to March 28th (inclusive). If you desire to take advantage of this privilege you should apply to Mr. S. E. Carr, Chemical Society, Burlington House, Piccadilly, London, W. 1, for a signed voucher, which must be surrendered at the Booking Office when the ticket is purchased.

List of papers, or abstracts thereof, received between January 16th and February 20th, 1930. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Derivatives of 3-keto-2 : 3-dihydrothionaphthen 1 : 1-dioxide." By A. COHEN and S. SMILES.

"Note on the melting point of 1 : 3 : 5-xylenoxyacetic acid." By T. LOVE.

"Nitration of phenyl substituents of heterocyclic nuclei." By R. FORSYTH and F. L. PYMAN.

"The apparent hydration of ions. Part IV. The densities and viscosities of saturated solutions of silver nitrate in nitric acid." By J. W. INGHAM.

"The ternary system zinc oxide–hydrochloric acid–zinc chloride–water." By H. C. HOLLAND.

"The interaction between alkyl Grignard reagents and antimony trichloride." By W. J. C. DYKE, W. C. DAVIES, and W. J. JONES.

"Syntheses by means of magnesium amyl halides." By W. C. DAVIES, R. S. DIXON, and W. J. JONES.

"Colour and constitution. Part V. The colours of certain azo-dyes from 2-chloro-3-aminoanisole and of the nitrobenz-

aldehyde-3-chloroanisyl-2-hydrazones." By H. H. HODGSON and A. KERSHAW.

"Intramolecular rearrangement in the isomeric tetrachloro-derivatives of *p*-tolylhydrazones." By F. D. CHATTAWAY and A. B. ADAMSON.

"Passivity of metals. Part IV. The influence of acids in passivity and corrosion." By U. R. EVANS.

"The reduction of triphenylhalogenomethanes." By J. C. THOMAS, S. T. BOWDEN, and W. J. JONES.

"The angles of floating lenses." By C. G. LYONS.

"A phase diagram for unimolecular films." By C. G. LYONS and E. K. RIDEAL.

"The electrical conductivities of solutions of tetramethylammonium iodide in benzonitrile." By A. R. MARTIN.

"Strychnine and brucine. Part IX. Preparation of some isomerides of dinitrostrychol and trinitrostrychol." By J. N. ASHLEY, (the late) W. H. PERKIN, and R. ROBINSON.

"The nature of the alternating effect in carbon chains. Part XXXII. The directive influence of ψ-basic systems in aromatic substitution. Nitration of benzylidene-*m*-nitroaniline." By J. W. BAKER and C. K. INGOLD.

"The chemistry of the three-carbon system. Part XXIV. The regeneration of some esters from their sodio-derivatives." By W. E. HUGH and G. A. R. KON.

"Primary and associated results of replacement of hydrogen directly attached to 4-co-ordinated carbon." By L. COCKER, A. LAPWORTH, and A. WALTON.

"The nitrosation of phenols. Part VIII. Resorcinol monoethyl ether." By H. H. HODGSON and H. CLAY.

"The determination of the dissociation pressures of hydrated salts by a dynamical method. Part III." By J. R. PARTINGTON and R. J. WINTERTON.

"γ-Phenyl-α-methylpropyldimethylarsine, β-benzylbutyldimethylarsine, and some related compounds." By A. BREWIN and E. E. TURNER.

"*iso*-β-Naphthol sulphide." By L. A. WARREN and S. SMILES.

"The partial esterification of polyhydric alcohols. Part XI. The differentiation between isomeric glycerides." By A. FAIRBOURNE.

"The reactivity of halogen atoms in compounds of the pyridine series. Part I. The halides of 2-stilbazole." By J. W. BLOOD and B. D. SHAW.

"A synthesis of pyrylium salts of anthocyanidin type. Part XIX. A synthesis of delphinidin chloride not involving a demethyl-

ation process together with an account of the synthesis of hirsutidin chloride and of delphinidin chloride 3′-methyl ether, possibly identical with petunidin chloride." By W. BRADLEY, R. ROBINSON, and G. SCHWARZENBACH.

"Digoxin, a new digitalis glucoside." By S. SMITH.

"Studies in polymorphism. Part I. A preliminary investigation of the polymorphism of *o*-nitroaniline." By J. F. J. DIPPY and N. H. HARTSHORNE.

"A simple method for the preparation of maleic anhydride." By F. A. MASON.

"The action of nitric acid on some metals." By E. S. HEDGES.

"The 'uniform movement' of flame in mixtures of ethylene, propylene, butylene, and air." By E. H. M. GEORGESON and F. J. HARTWELL.

"Further degradative experiments in the morphine group." By R. S. CAHN.

"Crystalline α-methylmannofuranoside (γ-methylmannoside). Part I." By W. N. HAWORTH and C. R. PORTER.

"Crystalline α-methylmannofuranoside (γ-methylmannoside). Part II." By W. N. HAWORTH, E. L. HIRST, and J. I. WEBB.

"Physical constants and miscibility curves of samples of *n*-butyric and *iso*butyric acids." By W. H. PATTERSON.

"The nitrosation of phenols. Part IX. Further study of the nitrosation of *m*-bromophenol." By H. H. HODGSON and A. KERSHAW.

"Symmetrical triad prototropic systems. Part VI. The effect of substitution on tautomeric mobility and equilibrium in the αγ-diphenylpropene system." By C. W. SHOPPEE.

"Conductivity measurements of the comparative rates of hydrolysis of lactones derived from simple sugars." By S. R. CARTER, W. N. HAWORTH, and R. A. ROBINSON.

"A synthesis of certain higher aliphatic compounds. Part III. A variation of the keto-acid synthesis, constituting an improved method for the extension of normal carbon chains." By (MRS.) G. M. ROBINSON.

"The essential oil of *Backhousia angustifolia*. Part II. The isolation of naturally occurring β-diketones; α- and β-angustiones." By C. S. GIBSON, A. R. PENFOLD, and J. L. SIMONSEN.

"Experiments on the constitution of the aloins." Part II. By C. S. GIBSON and J. L. SIMONSEN.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part VII. A generalised form of the olefinic degradation of sulphones." By G. W. FENTON and C. K. INGOLD.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part VIII. The methylenic and paraffinic degradation of sulphones." By C. K. INGOLD and J. A. JESSOP.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part IX. Isolation of a substance believed to contain a semipolar double linking with participating carbon." By C. K. INGOLD and J. A. JESSOP.

"Oxidation of *p*-aminophenyltrimethylammonium methosulphate and some quaternary ammonium derivatives." By A. ZAKI.

"Passivity of metals. Part V. The potential–time curves of some iron alloys." By L. C. BANNISTER and U. R. EVANS.

"Anthoxanthins. Part XI. A synthesis of diosmetin and of luteolin 3′-methyl ether." By A. LOVECY, R. ROBINSON, and S. SUGASAWA.

"Anthoxanthins. Part XII. Transition from a flavylium salt to a flavone, illustrated by a new synthesis of scutellarein tetramethyl ether." By R. ROBINSON and G. SCHWARZENBACH.

"The octammines—with special reference to tin." By A. J. COOPER and E. WARDLAW.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

DAVIES, CECIL WHITFIELD. The conductivity of solutions and the modern dissociation theory. London 1930. pp. viii + 204. ill. 15*s*. net. (*Recd.* 4/2/30.)
From the Publishers: Messrs. Chapman & Hall.

DESBLEDS, L. BLIN. Exact colour matching and specifying. Paris [n.d.]. pp. 116. ill. 4*s*. net. (*Recd.* 23/1/30.)
From the Publishers: Technological and Industrial Service.

HAISSINSKY, M. L'atomistica moderna e la chimica. Milano 1930. pp. xvi + 315. ill. *L*. 35. (*Recd.* 4/2/30.)
From the Publisher: Ulrico Hoepli.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. Abridged chemistry for higher educational institutions. 2nd edition. Leningrad 1930. pp. 161. [In Russian.] *R*. 2.50. (*Recd.* 4/2/30.) From the Author.

SOCIÉTÉ DE BIOLOGIE. Comptes rendus. Vol. CIII, etc. Paris 1930 +. (*Reference.*) From the Biochemical Society.

II. *By Purchase.*

ANDRESEN, M. [and others]. Erzeugung und Prüfung lichtempfindlicher Schichten. Lichtquellen. (Handb. wiss. angew. Photo-

graphie. Vol. IV.). Wien 1930. pp. viii + 344. ill. *M*. 39. (*Recd*. 16/1/30.)

ASCHAN, OSSIAN. Naphtenverbindungen, Terpene und Campherarten inkl. Pinusharzsäuren sowie Körper der Kautschukgruppe. Berlin 1929. pp. xvi + 378. *M*. 32. (*Recd*. 4/2/30.)

BEHRE, ALFRED. Chemische Laboratorien, ihre neuzeitliche Einrichtung und Leitung. Leipzig 1928. pp. x + 113 + 33 plates. ill. *M*. 7. (*Recd*. 13/12/29.)

BERMBACH, WILLIBAD. Die Akkumulatoren, ihre Theorie, Herstellung, Behandlung und Verwendung. Berlin 1929. pp. vi + 214. ill. *M*. 9.75. (*Recd*. 2/1/30.)

BONE, WILLIAM ARTHUR, NEWITT, DUDLEY MAURICE, and TOWNEND, DONALD THOMAS ALFRED. Gaseous combustion at high pressures: being mainly an account of the researches carried out in the high pressure gas research laboratories of the Imperial College of Science and Technology, London, together with the equipment and experimental methods employed. London 1929. pp. xiv + 396. 42*s*. net. (*Recd*. 16/1/30.)

BORN, MAX, and JORDAN, PASCUAL. Vorlesungen über Atommechanik. Vol. II. Elementare Quantenmechanik. (Struktur der Materie in Einzeldarstellungen.) Berlin 1930. pp. xii + 434. *M*. 30. (*Recd*. 7/2/30.)

BRUNNER, ALBERT. Analyse der Azofarbstoffe. Berlin 1929. pp. vi + 124. ill. *M*. 11.50. (*Recd*. 2/1/30.)

BYWATERS, HUBERT WILLIAM. Modern methods of cocoa and chocolate manufacture. London 1930. pp. xii + 316. ill. 21*s*. net. (*Recd*. 21/1/30.)

CAMPBELL, NORMAN ROBERT, and RITCHIE, DOROTHY. Photoelectric cells: their properties, use, and applications. London 1929. pp. viii + 209. ill. 15*s*. net. (*Recd*. 16/1/30.)

CONN, H. J. Biological stains. 2nd edition. Enlarged and revised with the assistance of W. C. HOLMES and R. W. FRENCH. Geneva, N.Y. 1929. pp. 224. ill. 13*s*. 6*d*. net. (*Recd*. 21/1/30.)

DEBYE, PETER. [Editor.] Dipolmoment und chemische Struktur. Leipzig 1929. pp. viii + 134. ill. *M*. 9. (*Recd*. 12/2/30.)

DEUTSCHE BUNSEN GESELLSCHAFT. Messungen elektromotorische Kräfte galvanischer Ketten mit wässerigen Elektrolyten. Edited by RICHARD ABEGG, FRIEDRICH AUERBACH, and ROBERT LUTHER. Halle (Saale) 1911. pp. xii + 213. *M*. 3.50.

—— —— Ergänzungsheft I. Edited by FRIEDRICH AUERBACH. Halle (Saale) 1915. pp. xii + 60. *M*. 2.

—— —— Ergänzungsheft II. Edited by CARL DRUCKER. Berlin 1929. pp. x + 234. *M*. 24. (*Recd*. 2/12/29.)

EUCKEN, ARNOLD. Lehrbuch der chemischen Physik. Being the 3rd edition of Grundriss der physikalischen Chemie. Leipzig 1930. pp. xvi + 1037. ill. *M.* 56. (*Recd.* 12/2/30.)

FINCKE, HEINRICH. Die Kakaobutter und ihre Verfälschungen. Stuttgart 1929. pp. 238. *M.* 20. (*Recd.* 2/1/30.)

GERLACH, WALTHER, and SCHWEITZER, EUGEN. Die chemische Emissions-Spektralanalyse. Grundlagen und Methoden. Leipzig 1930. pp. vi + 120. ill. *M.* 12.75. (*Recd.* 4/2/30.)

GORTNER, ROSS AIKEN. Outlines of biochemistry. The organic chemistry and the physico-chemical reactions of biologically important compounds and systems. New York 1929. pp. xvi + 793. ill. 30*s.* net. (*Recd.* 16/1/30.)

GRÜN, ADOLF. Analyse der Fette und Wachse. Vol. II. Berlin 1929. pp. xvi + 806. ill. *M.* 98. (*Recd.* 19/12/29.)

HACKH, INGO WALDO DAGOBERT. A chemical dictionary containing the words generally used in chemistry, and many of the terms used in the related sciences. Based on recent chemical literature. [Philadelphia 1929.] pp. viii + 790. ill. (*Reference.*) 2*s.* net.

HANDBUCH DER ALLGEMEINEN CHEMIE. Edited by PAUL WALDEN and CARL DRUCKER. VIII. i. Elektromotorische Kräfte, Elektrolyse und Polarisation. By ROBERT KREMANN and ROBERT MÜLLER. Leipzig 1930. pp. xvi + 891. ill. (*Reference.*) *M.* 85.

HERBIG, W. Die Öle und Fette in der Textilindustrie. 2nd edition. Stuttgart 1929. pp. viii + 451. ill. *M.* 32. (*Recd.* 2/1/30.)

KAPPEN, HUBERT. Die Bodenazidität. Nach agrikulturchemischen Gesichtspunkten dargestellt. Berlin 1929. pp. viii + 363. ill. *M.* 39. (*Recd.* 2/1/30.)

KAUSCH, OSCAR. Phosphor, Phosphorsäure und Phosphate. Ihre Herstellung und Verwendung. Berlin 1929. pp. vi + 325. ill. *M.* 42. (*Recd.* 12/2/30.)

LUNGE, GEORGE. Technical chemists' handbook. 3rd edition. Revised by ALEXANDER CHARLES CUMMING. London 1929. pp. xvi + 262. 12*s.* 6*d.* net. (*Recd.* 21/1/30.)

MARLOW, GEORGE STANLEY WITHERS. Law and industry. London 1929. pp. viii + 319. 17*s.* 6*d.* net. (*Recd.* 21/1/30.)

MIERS, SIR HENRY ALEXANDER. Mineralogy: an introduction to the scientific study of minerals. 2nd edition. Revised by HERBERT LISTER BOWMAN. London 1929. pp. xx + 658. ill. 30*s.* net. (*Recd.* 16/1/30.)

NASH, ALFRED WILLIAM and BOWEN, ARTHUR RILEY. The principles and practice of lubrication. London 1929. pp. xii + 315. ill. 15*s.* net. (*Recd.* 16/1/30.)

NIEL, C. B. VAN. The propionic acid bacteria. Haarlem 1928. pp. viii + 187. ill. 13*s.* 6*d.* net. (*Recd.* 13/2/30.)

PICKARD, JOSEPH ALLEN. Filtration and filters. With a section on the mathematical aspects of filtration by A. J. V. UNDERWOOD. London 1929. pp. 488. ill. 45*s.* net. (*Recd.* 16/1/30.)

PLINIUS, CAIUS SECUNDUS. Chapters on chemical subjects. Part I. Edited, with translation and notes, by KENNETH CLAUDE BAILEY. London 1929. pp. 249. 12*s.* 6*d.* net. (*Recd.* 21/1/30.)

SEDLACZEK, ERWIN. Die Krackverfahren unter Anwendung von Druck (Druckwärmespaltung). Berlin 1929. pp. iv + 402. ill. *M.* 45. (*Recd.* 2/1/30.)

SPONS' Workshop receipts for manufacturers and scientific amateurs. Supplement. London 1930. pp. viii + 458. ill. (*Reference.*) 5*s.* net.

STUCKERT, LUDWIG. Die Emailfabrikation. Ein Lehr- und Handbuch für die Emailindustrie. Berlin 1929. pp. viii + 276. ill. (*Recd.* 2/1/30.)

UNITED STATES. *Department of Commerce.* Bureau of Foreign and Domestic Commerce. Trade Promotion Series, No. 78. The American chemical industry. Production and foreign trade in first quarter of twentieth century. Washington 1929. pp. vi + 114. ill. 20 *c.* (*Recd.* 2/1/30.)

WEHMER, CARL. Die Pflanzenstoffe. 2nd edition. Vol. I. Jena 1929. pp. xvi + 640. *M.* 47.50. (*Recd.* 13/12/29.)

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III. *Pamphlets.*

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—— —— Pamphlet No. 15. The work of the Division of Economic Entomology for the year 1928–29. By ROBIN JOHN TILLYARD. Melbourne 1929. pp. 19.

—— —— Pamphlet No. 16. The work of the Division of Animal Nutrition for the year 1928–29. By THORBURN BRAILSFORD ROBERTSON. Melbourne 1929. pp. 30.

BRITISH PHOTOGRAPHIC RESEARCH ASSOCIATION. Report for the year 1928–29. London [1929]. pp. 15.

ELLIS, OLIVER COLIGNY DE CHAMPFLEUR. Flame movements in gaseous mixtures. (From *Fuel*, 1928, **7**.)

GARCÍA-BLANCO, J. Microdeterminación directa del agua en tejidos conectivos. (From the *Arq. Seminario Est. Galegos*, 1929.)

García-Blanco, J. Sobre la regulación hormonal de la economía hídrica en el tejido celular subcutáneo. (From the *Arq. Seminario Est. Galegos*, 1929.)

Indian Lac Association for Research. Bulletin No. 1. Physical properties of shellac solutions. Part I. By M. Rangaswami and M. Venugopalan. Calcutta 1928. pp. ii + 14.

Institute of Chemistry of Great Britain and Ireland. The world's sugar industry. By Lewis Eynon. London 1929. pp. 20.

Kuno, Yufu. Critical study on the enzymic decomposition of nicotine. (From the *Bul. Sci. Fak. Terkult. Kjûsu*, 1929, **3**.) [In Japanese. English summary.]

Leffmann, Henry, and Pines, Charles C. Further notes on tests for acetone and aldehyde. (From the *Bull. Wagner Free Inst. Sci. Philadelphia*, 1929, **4**.)

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Mines Department. *Safety in Mines Research Board.* Paper No. 56. The relative inflammability of coal dusts : a laboratory study. By A. L. Godbert and Richard Vernon Wheeler. London 1929. pp. 23. ill.

—— —— Paper No. 57. Mine rescue apparatus : the S.M.R.B. gas mask. By S. H. Katz and C. S. W. Grice. London 1930. pp. 37. ill.

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—— Estudio químico de la nontronita de Chenlo (Pontevedra). Mineral nuevo para España. (From the *Arq. Seminario Est. Galegos*, 1929.)

—— El contenido en iodo de las principales algas marinas de las costas de Galicia. (From *Datos Geoquím, Galicia*, 1927.)

Pondal, Isidro Parga, and Vázquez-Garriga, J. Contribución al estudio de los minerales de wolframio de Galicia. I. Análisis de las wolframitas de la Brea, Corpiño y Carboeiro (Lalín, Pontevedra). (From the *Arq. Seminario Est. Galegos*, 1929.)

Scientific and Industrial Research, Department of. Report of test . . . on the Turner retort installed at the works of the Comac Oil Co., Ltd., Coalburn, Lanarkshire. London 1930. pp. vi + 29. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, *Department of. Building Research.* Bulletin No. 6. The prevention of corrosion of lead in buildings. By FRANK LAWRENCE BRADY. London 1929. pp. iv + 4. ill.

—— —— Special Report No. 13. The use of calcium chloride or sodium chloride as a protection for mortar or concrete against frost. By W. N. THOMAS. London 1929. pp. iv + 30.

—— —— Technical Paper No. 8. The corrosion of lead in buildings. By FRANK LAWRENCE BRADY. London 1929. pp. vi + 30. ill.

—— *Fuel Research.* Special Report No. 5. Fires in steamship bunker and cargo coal. London 1929. pp. vi + 55. ill.

—— —— Technical Paper No. 24. The assay of coal for carbonisation purposes. (Part iii.) Correlation with coal gas manufacture. By JAMES GRIEVE KING and L. J. EDGCOMBE. London 1930. pp. vi + 30. ill.

SHINODA, J., SATO, S., and KAWAGOYE, M. Neue Synthese von Polyoxychalkon, Polyoxyhydro-chalkon und Polyoxyflavanon. VI. Zur Synthese von Butein, Butin und Phloretin. (From the *J. Pharm. Soc. Japan*, 1929, **49**.) [In Japanese. German summary.]

SOUTH AFRICA, UNION OF. *Department of Agriculture.* (Division of Chemistry, Series No. 95.) The soil solution and its relation to the soil colloids. By D. J. R. VAN WIJK. (From the *Proc. Dept. Conf.*, 1929.)

—— —— (Division of Chemistry, Series No. 96.) Note on the distribution of nitrogen in some fruits. By P. D. V. D. R. COPEMAN. (From the *Proc. Dept. Conf.*, 1929.)

—— —— (Division of Chemistry, Series No. 97.) Routine mechanical analysis of soils by the Robinson method. By J. P. VAN ZIJL. (From the *Proc. Dept. Conf.*, 1929.)

—— —— (Division of Chemistry, Series No. 98.) A report of the findings of the "pica survey" of 1921–1922. By J. P. VAN ZIJL, H. H. GREEN, and B. DE C. MARCHAND. (From the *Proc. Dept. Conf.*, 1929.)

—— —— (Division of Chemistry, Series No. 99). Hardpans, concretionary layers and neo-formations of the soils of the more arid parts of the Union. By J. V. CUTLER. (From the *Proc. Dept. Conf.*, 1929.)

—— —— (Division of Chemistry, Series No. 100.) The fixation of phosphates in soils. By C. O. WILLIAMS. (From the *Proc. Dept. Conf.*, 1929.)

UNITED STATES. *Department of Agriculture.* Technical Bulletin No. 141. The spontaneous combustion of hay. By CHARLES A. BROWNE. Washington 1929. pp. 38. ill.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 6th, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
William E. Bickerdike	Dec. 7th, 1865.	Feb. 26th, 1930.
Alaric V. C. Fenby	May 6th 1897.	Feb. 21st, 1930.

The following list of Nominations for vacant places on the Council was read from the Chair :

President : J. F. THORPE.

Vice-Presidents who have filled the office of President (two vacancies) :

P. F. FRANKLAND, A. SCOTT.

Vice-Presidents who have not filled the office of President (two vacancies) :

A. LAPWORTH, F. L. PYMAN.

Ordinary Members of the Council :

Town Members (*i.e.* those resident within a radius of fifty miles from Charing Cross) ; three vacancies :

T. J. DRAKELEY, R. H. A. PLIMMER, C. K. TINKLER.

Country Members (*i.e.* those resident beyond a radius of fifty miles from Charing Cross) ; three vacancies :

H. M. DAWSON (Leeds), E. HOPE (Oxford), J. KENDALL (Edinburgh).

The following were formally admitted Fellows of the Chemical Society : Edmund Langley Hirst, R. Campbell Feather, and A. Vasundhara.

Forms of Recommendations were read for the first time in favour of :

Norah Janet Broadway, B.Sc., 16, Lodge Road, West Croydon.
John Henry Daniels, 4, Mill Lane, Wallasey, Cheshire.

Wilfred Morley Morgans, B.Sc., Charman Dene, Cromwell Avenue, Cheshunt.
Donald Price, M.A., Ph.D., 37, Grange Road, Cambridge.
Pundi Ranga Ramanujam, B.A., 18, Gloucester Road, Kew.
Foster Dee Snell, B.S., A.M., Ph.D., 130, Clinton Street, Brooklyn, New York.
James Williamson, Ivanhoe, Bilston Road, Aigburth, Liverpool.

The following papers were read :

"Crystalline α-methylmannofuranoside (γ-methylmannoside). Part I." By W. N. HAWORTH and C. R. PORTER.

"Crystalline α-methylmannofuranoside (γ-methylmannoside). Part II." By W. N. HAWORTH, E. L. HIRST, and J. I. WEBB.

"Passivity of metals. Part IV. The influence of acids in passivity and corrosion." By U. R. EVANS.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part VII. A generalised form of the olefinic degradation of sulphones." By G. W. FENTON and C. K. INGOLD.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part VIII. The methylenic and paraffinic degradations of sulphones." By C. K. INGOLD and J. A. JESSOP.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part IX. Isolation of a substance believed to contain a semi-polar double linking with participating carbon." By C. K. INGOLD and J. A. JESSOP.

Ordinary Scientific Meeting, Thursday, March 20th, 1930, at 8 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Kennedy J. P. Orton	May 6th, 1897.	March 16th, 1930.
John Henry Taylor	May 2nd, 1918.	July 15th, 1929.
Sir David Wilson	June 21st, 1883.	March 8th, 1930.
Allister MacLean Wright	Dec. 3rd, 1908.	Jan. 31st, 1930.

In referring to the death of Professor K. J. P. Orton the President said :

"Professor Orton, who died on March 16th last at the age of 58, was Professor of Chemistry in the University College of N Wales, Bangor. Formerly he held the position of demonstrator at St. Bartholomew's Hospital. He was the author of numerous papers which appeared in our Journal dealing with

chloroamines, nitroamines, and kindred subjects. In this field he was a successful pioneer in the application of kinetic measurements to the elucidation of reaction mechanism. He served on the Council from 1913 to 1917, and from 1926 to 1929, and was elected F.R.S. in 1921. Fellows will mourn his death as a loss not only to the Society, but to Chemistry generally.

It was announced that the following Address of Congratulation had been sealed in Council that afternoon and would be presented to the American Society of Mechanical Engineers on the occasion of its 50th Anniversary Celebrations to be held in New York, Hoboken, and Washington from April 5th to 9th, 1930 :—

The Chemical Society
to the
American Society of Mechanical Engineers.

The meeting held at Stevens Institute of Technology in Hoboken, N.J., on the 7th April, 1880, was fraught with signal importance for the future of Mechanical and Engineering Science in the United States. Fifty years have elapsed since then, and during those years your Society has ever been prominent in developing the cultural, social, economic, and political life of your country on its engineering side. Your activities have been closely linked with the work of the chemist, for it is certain that without the close co-operation between engineering and chemical science which your Society has fostered the great development of chemical industry in modern times would have been impossible.

The Chemical Society therefore sends greetings and congratulations coupled with the hope that the American Society of Mechanical Engineers may continue with ever increasing success to further the objects for which it was founded.

Signed on behalf of the Chemical Society,

JOCELYN THORPE, *President.*
T. SLATER PRICE, *Treasurer.*
L.S.
C. S. GIBSON, } *Secretaries.*
T. S. MOORE, }
F. G. DONNAN, *Foreign Secretary.*

Sealed in Council this Twentieth Day of March, One Thousand Nine Hundred and Thirty.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Dorothy May Diamond, South View, Langton, Tunbridge Wells.
Homi Ruttonji Nanji, B.Sc., 48, Penywern Road, S.W. 5.
Wilfred Beaumont Orr, D.Sc., Ph.D., 212, Upper Newtownards Road, Bloomfield, Belfast.

Charles Benjamin Walter Richardson, B.Sc., 133, Inverness Terrace, Bayswater, W. 2.
Allan Coley Waine, B.Sc., Ellesmere, Anchorage Road, Sutton Coldfield, Birmingham.
Ronald Southern Walton, B.Sc., The Ranelagh School, Athlone, I.F.S.

The following forms of recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2):

N. Dănailă, Institute of Industrial Chemistry, Calea Masilor 132, Bucarest.
Lionel Stuart Davis, Government Laboratory, Georgetown, Demerara.
William Francis, F.I.C., Government Laboratory, Georgetown, Demerara.
G. G. Longinescu, University of Bucarest, Bucarest.
Samuel Marion McElvain, 2017, Adams Street, Madison, Wisc., U.S.A.
Emil Severin, Polytechnic School, Bucarest.
Albert Ernest Robert Westman, M.A., Ph.D., 47, Queen's Park, Toronto.

The following papers were read:

"The mechanism of and constitutional factors controlling the hydrolysis of carboxylic esters. Part I. The constitutional significance of hydrolytic stability maxima." By C. K. INGOLD.

"The mechanism of and constitutional factors controlling the hydrolysis of carboxylic esters. Part II. Hydrolytic stability maxima of some glyceric esters." By (Miss) C. M. GROCOCK, C. K. INGOLD, and A. JACKSON.

"On active nitrogen. Part VIII. (*a*) The influence of photogens and of surfaces upon glow phenomena in nitrogen; and (*b*) The effects of addition of other gases to luminous nitrogen." By E. J. B. WILLEY.

FARADAY LECTURE.

The Faraday Lecture will be delivered by Professor Dr. Niels Bohr, of Copenhagen, on Thursday, May 8th, 1930. The title of the Lecture will be "Chemistry and the Quantum Theory."

Further particulars will be announced later.

List of Papers, or Abstracts thereof, received between February 20th and March 20th, 1930. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting or which have appeared in the Journal.)

"Tetrachloroiodides of the alkaloids." By F. D. CHATTAWAY and G. D. PARKES.

"Quinoline compounds containing arsenic. Part I. Synthesis of 6-methoxyquinoline derivatives of aminophenylarsinic acids." By R. H. SLATER.

"*Cannabis Indica* resin. Part I. The constitution of nitrocannabinolactone (oxycannabin)." By R. S. CAHN.

"The nature of the alternating effect in carbon chains. Part XXXIII. The nitration of some aromatic sulphonium and selenonium salts." By J. W. BAKER and W. G. MOFFITT.

"Aromatic stibinic acids containing phenyl and quinolyl radicals." By G. T. MORGAN and J. W. COOK.

"The rearrangement of the alkylanilines. Part II. The course of the rearrangement in presence of metal salts." By W. J. HICKINBOTTOM, and (in part) A. C. WAINE.

"The rearrangement of the alkylanilines. Part III. The formation of *p*-amino*iso*butylbenzene and of *p*-amino-*tert.*-butylbenzene from *iso*butylaniline." By W. J. HICKINBOTTOM and G. H. PRESTON.

"The preparation of secondary aryl alkylamines and their purification." By W. J. HICKINBOTTOM.

"Organic derivatives of silicon. Part XLI. *cyclo*Hexyl derivatives of silicane and silicoethane." By K. W. PALMER and F. S. KIPPING.

"Organic derivatives of silicon. Part XLII. The formation of tri- and tetra-phenylsilicane by the action of sodium on triphenylsilicyl chloride." By F. S. KIPPING and J. F. FROST.

"Attempts to prepare cyanine dyes from quaternary salts of 2-methylacenaphthpyridine and of *ms*-methylacridine." By F. M. HAMER.

"The addition of halogens to unsaturated acids and esters. Part III. The velocity of bromination." By N. W. HANSON and D. M. WILLIAMS.

"Investigations in the diphenyl series. Part IX. Further experiments with sulphonamides." By F. BELL.

"The behaviour of hydrogen chloride in different solvents." By W. F. K. WYNNE-JONES.

"The effect of gas pressure on the colour of halogen vapours." By A. SHEARER and R. WRIGHT.

"The calculation of activity coefficients from solubility measurements: thallous chloride." By H. E. BLAYDEN and C. W. DAVIES.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part XIII. Absorption spectra." By C. S. GIBSON, E. S. HISCOCKS, J. D. A. JOHNSON, and J. L. JONES.

"The action of fuming nitric acid on the 4-halogeno-2 : 6-dibromophenols and -anisoles. Anomalous behaviour of fluorine." By H. H. HODGSON and J. NIXON.

"Polycyclic aromatic hydrocarbons. Part I. α- and β-Phenyl-

anthracene and some derivatives of 1 : 2-benzanthracene." By J. W. COOK.

"The dismutation of some disulphides." By E. W. MCCLELLAND and L. A. WARREN.

"Orientation effects in the diphenyl series. Part VIII. The nitration of 4 : 4'-difluorodiphenyl." By R. J. W. LE FÈVRE and E. E. TURNER.

"The validity of the interference method for the measurement of the specific area of a copper surface." By F. J. WILKINS.

"2-Arylcoumaranones." By W. BAKER.

"A revision of the atomic weight of tantalum. Determination of the ratios $TaBr_5 : 5Ag : 5AgBr$ and $TaCl_5 : 5Ag : 5AgCl$." By K. R. KRISHNASWAMI.

"The bromination of 2-nitro- and 2-acetamido-diphenyl ether." By H. MCCOMBIE, W. G. MACMILLAN, and H. A. SCARBOROUGH.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 1st, 1930.

BARKWORTH, EDMUND DAVID PATRICK, Flat 2, 4, Colville Square, Notting Hill Gate, W. 11. British. Research Chemist. B.A., Oxon. I desire to keep in touch with present-day developments in chemistry. (*Signed by*) A. A. W. Russell, C. N. Hinshelwood, N. V. Sidgwick.

BROADWAY, NORAH JANET, 16, Lodge Road, W. Croydon, Surrey. British. Student of Chemistry. B.Sc. (General), London, 2nd Class Hons., 1929. I wish to attend meetings of the Society and receive the Journal. (*Signed by*) James F. Spencer, Ernest S. Hedges, Z. Kamil.

COYSH, REGINALD HENRY, 7, Cannon Close, Raynes Park, S.W. 20. British. Assistant Lecturer in Chemistry. M.Sc. (Bristol). Present position: Assistant Lecturer in Chemistry, Battersea Polytechnic. (*Signed by*) J. Kenyon, T. Heap, F. Bell.

DANIELS, JOHN HENRY, 4, Mill Lane, Wallasey, Cheshire. British. Chemical Engineering Assistant, Wallasey Corporation, Gas and Water Dept. Regularly trained as a Gas and Water Engineer, including three years' laboratory and control. Associate Member of the Chartered Institute of Gas Engineers. Higher National Certificate, Gas Engineering (Institute of Gas Engineers); Ordinary National Certificate (Institute of Mechanical Engineers); School Leaving Certificate (Credits in Physics and Chemistry); Final Grade Certificate, Gas Engineering (City and Guilds of London); Earl of Derby Prize, Engineering and Design. (*Signed by*) A. E. Findley, Thomas J. Roberts, Andrew J. Myles.

DIAMOND, DOROTHY MARY, "South View," Langton, Tunbridge Wells, Kent. British. Student of Chemistry. I wish to attend the meetings of the Society and to receive the Journal. (*Signed by*) James F. Spencer, Ernest S. Hedges, Z. Kamil.

HICKSON, LOUIS ROBERT, 19, The Cambridge Road, N. 17. British.

Chief Chemist, Messrs. Hadfields (Merton), Ltd. B.Sc. (Hons.), London (East London College). A.I.C. Lecturer (Nitrocellulose Lacquers), The Polytechnic, Regent Street. Contributor to *Annual Reports on Applied Chemistry* (1929), Cellulose Ester Varnishes and Enamels Sections. Four years' laboratory and works control experience, Messrs. Hadfields (Merton), Ltd., Mitcham, Surrey. *J.C.S.*, 1925, **127**, 2544 (in conjunction with J. H. Carrington and W. H. Patterson). (*Signed by*) Louis A. Jordan, J. O. Cutter, Herbert H. Hughes.

LLOYD, IVOR, 8A, Chip Street, Clapham, S.W. 4. British. Consulting Metallurgist. Managing Director of Expert Tool and Case-hardening Co., Ltd., specialising in the scientific treatment of steels and non-ferrous metals for aircraft and automobile industry. (*Signed by*) J. C. Crocker, F. H. Lowe, C. Dorée.

MIDDLETON, ARTHUR WILLIAM, 27, St. Bernard's Road, East Ham, E. 6. English. Chemist. B.Sc., Special, London (2nd Class Chemistry). Analyst, Messrs. Yardley & Co. Assistant Chemist (Research and Analytical), Allen and Hanbury's, Ltd. (*Signed by*) A. M. Ward, Henry J. S. Sand, F. G. Kny Jones.

MORGANS, WILFRED MORLEY, Charman Dene, Cromwell Avenue, Cheshunt, Herts. British. B.Sc. (Wales). Organic Chemistry Research Student, University College, London. (*Signed by*) Robert Robinson, William Bradley, K. N. Menon.

MURRAY, MARGARET MARY, 42, Wilton Crescent, Wimbledon, S.W. 19. British. Lecturer in Biochemistry. B.Sc. and M.Sc., London. Recognised Teacher in the University of London in Biochemistry. Papers in *Biochem. Journal*, 1924 and 1925; *Journal of Physiology*, 1924, 1926–27, and 1928. (*Signed by*) Eustace E. Turner, Rosalind Henley, Mary S. Lesslie.

NANJI, HOMI RUTTONJI, Modi Minar, Parel Road, Bombay, 12; and 48, Penywern Road, S.W. 5. Parsi (Indian). Research Student. Working for the Ph.D. degree (London) in the Imperial College of Science. B.Sc. (First), University of Bombay. Holding a Research Scholarship of the University of Bombay. (*Signed by*) G. A. R. Kon, Arnold Stevenson, R. P. Linstead.

OLDHAM, WILLIAM DALES, 22, Edenhall Avenue, Levenshulme, Manchester. British. Works Chemist. University of Manchester Certificate in Chemical Technology. Associateship of the College of Technology, Manchester. Part-time Demonstrator in Bacteriology at the College of Technology, Manchester. (*Signed by*) T. K. Walker, W. H. Brindley, O. Rhys Howell.

ORR, WILFRED BEAUMONT, 212, Upper Newtownards Road, Bloomfield, Belfast. British. Assistant Lecturer in Chemistry, University College, Hull. D.Sc. (Belfast); Ph.D. (Durham). Formerly Senior Assistant in Chemistry, Queen's University, Belfast, and D.S.I.R. student. *J.C.S.*, 1927, 740. (*Signed by*) F. G. Tryhorn, A. W. Stewart, H. Graham, J. K. Marsh.

PRICE, DONALD, 37, Grange Road, Cambridge. American. Research Student, Cambridge University. A.B., M.A., Ph.D. (Columbia). Assistant in Chemistry, Columbia University, New York, 1925–28; Du Pont Fellow in Chemistry, 1928–29; Member American Chemical Society since 1926. (*Signed by*) T. M. Lowry, Brynmor Jones, R. C. Traill.

RAMANUJAM, PUNDI RANGA, 18, Gloucester Road, Kew, Surrey. British Indian. Student. B.A. (Hons.), Madras University. Research Student in the Imperial College of Science and Technology. (*Signed by*) James C. Philip, H. J. T. Ellingham, A. Vasundhara.

RAYBOULD, WILLIAM EDWARD, 30, Station Street, Sutton Coldfield, Bir-

mingham. British. Works Chemist. B.Sc. (Hons.), Birmingham University; Associate of the Institute of Chemistry. Works Chemist, Messrs. Morris & Shaw, Ltd., nr. Tamworth. (*Signed by*) A. W. Knapp, W. N. Haworth, S. R. Carter, Wm. Wardlaw.

RICHARDSON, CHARLES BENJAMIN WALTER, 133, Inverness Terrace, Bayswater, W. 2. British. Research Chemist. B.Sc., London. Six years with Messrs. Hadfields (Merton), Ltd., as Chemist. Three years at the Paint Research Station (Teddington). Research in paint technology. (*Signed by*) L. A. Jordan, J. O. Cutter, G. M. Hamilton, C. W. H. Story.

SNELL, FOSTER DEE, 130, Clinton Street, Brooklyn, N.Y. American. Consulting Chemist. B.S., Colgate, 1919; A.M., Columbia, 1922; Ph.D., Columbia, 1923. Teaching Technical Chemistry, Pratt Institute, five years (1923–28). Publications: Book Colorimetric Anal., 1921. Various papers on rayon, treatment of trade waste, and other subjects. (*Signed by*) M. L. Crossley, Arthur D. Little, Marston T. Bogert.

THORNE, WALTER FREDERICK, 4, Langley Road, Branksome, Bournemouth. British. Chemist. B.Sc., London (External), 2nd Class Honours Chemistry. I have been a Chemist to the Bournemouth Gas and Water Company for nearly six years. (*Signed by*) E. A. Seeley, M. A. M. Penrose, Philip G. G. Moon.

TOMKINSON, FREDERIC ERIC, "Eirianfa," St. Asaph, Flintshire, North Wales. British. Schoolmaster. B.Sc., 1st Class Honours in Chemistry, Liverpool University; M.A., Liverpool; Sheridan Muspratt Research Scholar. At present, and since February 1927, Chemistry Master at the St. Asaph Grammar School, North Wales. (*Signed by*) E. C. C. Baly, F. C. Guthrie, J. T. Nance, I. M. Heilbron.

WAINE, ALLAN COLEY, Ellesmere, Anchorage Road, Sutton Coldfield, Birmingham. British. Research Chemist, University of Birmingham. B.Sc. (Hons.), Birmingham. In order to keep in touch with the latest developments in chemical research. (*Signed by*) W. N. Haworth, H. D. K. Drew, Wm. Wardlaw.

WALTON, ERIC, 15, Avenue Gardens, Teddington, Middlesex. British. Research in Chemotherapy Section, Chemical Research Laboratory, Teddington. B.Sc. (Hons. Chem.), M.Sc., Ph.D. (University of Durham). Nearly three years research at Armstrong College, Newcastle-on-Tyne. College Research Student, 1928–29. *J.C.S.*, 1928, 723; 1929, 2368. (*Signed by*) G. R. Clemo, R. D. Haworth, G. T. Morgan.

WALTON, RONALD SOUTHERN, The Ranelagh School, Athlone, I.F.S. English. School Science Master. Graduate (2nd Class Honours in Chemistry) of Durham University, and wishing to keep in touch with recent advances in chemistry. (*Signed by*) Irvine Masson, C. W. Gibby, G. H. Christie, W. A. Waters.

WHITAKER, ALFRED HAROLD, 131, Holmleigh Road, Stamford Hill, N. 16. British. Chief Chemist, Dry Colour Dept., Lewis Berger. I desire to be considered for Fellowship in order to study all recent developments of chemical science. My own work has comprised original research on pigmentary dyes, *e.g.* Hansa yellows, permanent red series, and on intermediates (nitrotoluidines, and various sulphonic acids). (*Signed by*) William Baird, Louis A. Jordan, G. M. Hamilton, J. O. Cutter.

WILLIAMS, ROBERT DAVID, The Paint Research Station, Teddington, Middlesex. British. Research Chemist. B.Sc., Hons. (2nd Class); M.Sc. (Liverpool). I am engaged on research under the Research Association of British Paint, Colour, and Varnish Manufacturers, and desire to keep in

touch with modern developments. (*Signed by*) L. A. Jordan, J. O. Cutter, C. W. H. Story, G. M. Hamilton.

WILLIAMSON, JAMES, "Ivanhoe," Bilston Road, Aigburth, Liverpool. British. Manufacturing Chemist. M.P.S., Edinburgh. I am engaged in analytical work and control of manufacturing process in a wholesale chemical laboratory, and I desire to use the Library of the Society. (*Signed by*) John Rae, H. Humphreys Jones, J. E. Whipp.

YOUNG, ERIC ERNEST THOMAS, Elmhurst, Lonsdale Place, Derby. British. Student. To keep in touch with chemical progress. (*Signed by*) F. Stanley Kipping, F. C. Laxton, B. D. Shaw.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2):

BORG, PAUL, Office of Agriculture, Malta, or 47, Marina via Misida, Sliema, Malta. Maltese (British subject). Plant Pathologist to the Malta Dept. of Agriculture. Pharmaceutical Chemist, University of Malta. Investigation on the wine-growing industry in Western Europe and Algeria on behalf of the Colonial Research Committee. (*Signed by*) H. W. Potts.

DĂNĂILĂ, H. Institute of Industrial Chemistry, Calea Masilor 132, Bucarest 1, Roumania. Roumanian. Professor and Director of the Institute of Industrial Chemistry. (*Signed by*) F. G. Donnan.

DAVIS, LIONEL STUART, Government Analyst's Department, Government Laboratory, Georgetown, Demerara, British Guiana. British. First Assistant Analyst. (*Signed by*) R. Robertson.

FRANCIS, WILLIAM, Government Analyst's Department, Government Laboratory, Georgetown, Demerara, British Guiana. British. Government Analyst, B.G. F.I.C. Desires to receive the publications of the Society. (*Signed by*) G. G. Henderson.

LONGINESCU, G. G., University of Bucarest, Str. V. A. Ureche 18, Bucarest 6, Roumania. Roumanian. Professor of Inorganic Chemistry. (*Signed by*) F. G. Donnan.

MCELVAIN, SAMUEL MARION, 2017, Adams Street, Madison, Wisconsin, U.S.A. American. Assoc. Professor of Chemistry, University of Wisconsin. B.S., Washington University (1920); M.A. and Ph.D., University of Illinois (1921 and 1923). The following publications: *J. Amer. Chem. Soc.*, **45**, 2739 (1923); **46**, 1721 (1924); **48**, 2179 (1926); **48**, 2239 (1926); **49**, 2835 (1927); **49**, 2862 (1927); **50**, 3348 (1928); **51**, 863 (1929); **51**, 887 (1929); **51**, 922 (1929); **51**, 3124 (1929); **51**, 3390 (1929). (*Signed by*) Homer Adkins.

ROBERTS, ROBERT CHESTER, Colgate University, Hamilton, N.Y., U.S.A. American. Head, Department of Chemistry, Colgate University. B.S., Ottawa University, Ottawa, Kansas; M.A., University of Kansas, Lawrence, Kansas; Ph.D., Yale University, New Haven, Conn. Teaching Assistant, Yale University, 1920–21. Professor of Chemistry, Franklin College, 1915–28. Professor of Chemistry and Head of Department, Colgate University, 1928 to date. "Action of Certain Acid Reagents on the Substituted Ureas and Thiazole," F. B. Dains, R. C. Roberts, and R. Q. Brewster, *J. Amer. Chem. Soc.*, **38**, 131–40; "Preparation of Derivatives of Diphenic Acid possessing the Properties of Local Anæsthetics," R. C. Roberts and T. B. Johnson, *ibid.*, **47**, 1396–1402 (1925). (*Signed by*) J. F. McGregory.

SEVERIN, EMIL, Industrial Section of the Polytechnic School, Bucarest,

Roumania. Roumanian. Head of the Industrial Section of the Bucarest Polytechnic School, and Professor of Chemistry. (*Signed by*) F. G. Donnan.

Shewade, Vinayak Yeshwant, 80, Ada Bazar, Indore, Central India. Hindu (State subject). Chemical Engineer. B.Sc. in Chem. Eng., University of Illinois, U.S.A. Contribution to 8th International Congress of Applied Chemistry (Vol. 25, 355); special analytical and research work in coal–gas–tar–ammonia with Indiana Steel Co., Gary, Ind., U.S.A.; experience in leather manufacture with Woelfel Leather-Morris, Ill., U.S.A.; some time Member Amer. Chemical Society and Amer. Leather Chemists' Assoc.; Member Society of Chemical Industry; at present Chemical Engineer, Holkar State; experience in organising essential oil and pharmaceutical work; engaged in development of chemical and industrial resources of the State (in general); and hydrogenation of vegetable oils and its scope in the State (work in hand at present). (*Signed by*) S. S. Deshapande.

Westman, Albert Ernest Roberts, Ontario Research Foundation, 47, Queen's Park, Toronto 5, Ontario, Canada. Canadian. Director of Chemical Research. B.A., M.A., Ph.D. in Honour Chemistry, University of Toronto. Papers: *Trans. Amer. Electrochem. Soc.*, **43**, 171 (1923); **44**, 137 (1923); **46**, 205 (1924), etc.; *Journ. Amer. Ceramic Soc.*, **10**, 3, 133 (1927); **11**, 2, 82 (1928), etc.; Res. Assoc., Engin. Exp. Sta., Univ. of Illinois, 1924–28; Assoc. Prof. of Ceramics, Rutgers, 1928–29. (*Signed by*) W. Lash Miller.

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Adam, Neil Kensington. The physics and chemistry of surfaces. Oxford 1930. pp. x + 332. ill. 17*s.* 6*d.* net. (*Recd.* 28/2/30.) From the Author.

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From the Publishers: Revue d'Optique théorique et instrumentale.

Canada. *National Research Council.* Canadian Journal of Research. Vol. I, etc. Ottawa 1929 +. (*Reference.*)
From the Director.

Cement and Cement Manufacture. The international cement journal. Vol. III, etc. London 1930 +. (*Reference.*)
From the Editor.

Davidsohn, Isser. Lehrbuch der Seifenfabrikation. Berlin 1928. pp. xxiv + 731. ill. *M.* 39. (*Recd.* 25/2/30.)

Denham, Henry George. An inorganic chemistry. 2nd edition. London 1930. pp. viii + 688. ill. 12*s.* 6*d.* net. (*Recd.* 8/3/30.) From the Publishers: Messrs. Edward Arnold & Co.

Durrans, Thomas Harold. Solvents. (Monographs on Applied Chemistry.) London 1930. pp. xvi + 144. 10*s.* 6*d.* net. (*Recd.* 13/3/30.) From the Publishers: Messrs Chapman & Hall.

FRITZ, FELIX. Sechzig Jahre Linoleumfabrikation. (From *Seifenseider Zeitung*, 1924.) pp. 98. ill. (*Recd.* 25/2/30.)

GRAEFE, EDMUND, [and others]. Einführung in die chemische Technologie der Brennstoffe. Dresden 1927. pp. viii + 197. ill. *M.* 10. (*Recd.* 25/2/30.)

HOLMYARD, ERIC JOHN. Inorganic chemistry: a text-book for schools and colleges. London [1922]. pp. xii + 560. ill. 6*s.* 6*d.* net. (*Recd.* 3/3/30.)

—— Outlines of organic chemistry. London [1924, reprinted] 1928. pp. xii + 468. ill. 7*s.* 6*d.* net. (*Recd.* 3/3/30.)

—— An elementary chemistry. 2nd edition. London [1927]. pp. viii + 430. ill. 5*s.* net. (*Recd.* 3/3/30.)

From the Publishers: Messrs. Edward Arnold & Co.

INSTITUTION OF ELECTRICAL ENGINEERS. Journal. Vol. LXVIII, etc. London 1929 +. (*Reference.*).

From the Faraday Society.

ISTITUTO BIOCHEMICO ITALIANO. Archivio. Vol. I, etc. Milan 1929 +. (*Reference.*) From the Biochemical Society.

NATIONAL BENZOLE ASSOCIATION. Standard specifications for benzole and allied products, 1929. London 1929. pp. xiv + 145. ill. (*Reference.*). 6*s.* net. From the Association.

RETAIL CHEMIST, The. Vol. I, etc. London 1930 +. (*Reference.*)

From the Editor.

SOCIETY OF CHEMICAL INDUSTRY OF VICTORIA. [Proceedings.] Vol. XXVII, etc. Melbourne 1927 +. (*Reference.*)

From the Editor.

SPACKMAN, CHARLES. Some writers on lime and cement, from Cato to the present time. Cambridge 1929. pp. xviii + 287. (*Reference.*) 15*s.* net.

STANISLAUS, IGNATIUS VALERIUS STANLEY, and MEERBOTT, P. B. American soap maker's guide. An up to date treatise on the art and science of the manufacture of soaps, candles and allied preparations. [New York 1929.] pp. xii + 709. ill. 50*s.* net. (*Recd.* 25/2/30.)

SUPINO, OSCAR. Acido solforico e superfosfati minerali. Milano 1930. pp. viii + 253. ill. (*Recd.* 25/2/30.)

UNITED STATES. *Department of Commerce.* Bureau of Standards Technologic Paper No. 112. Standardization of the Saybolt universal viscosimeter. By WINSLOW H. HERSCHEL. Washington 1918. pp. 25. (*Reference.*)

—— —— —— Technologic Paper No. 170. Pyrometric practice. By PAUL D. FOOTE, C. O. FAIRCHILD, and T. R. HARRISON. Washington, 1921. pp. 326. ill. (*Reference.*) From Mr. H. M. Spiers.

II. *By Purchase.*

ANSCHÜTZ, RICHARD. August Kekule. 2 vols. Berlin 1929. pp. xxiv + 708. xvi + 960. ill. *M.* 120. (*Recd.* 19/2/30.)

ARNDT, KURT. Technische Elektrochemie. Stuttgart 1929. pp. xvi + 708. ill. *M.* 55. (*Recd.* 19/2/30.)

CALVERT, ROBERT. Diatomaceous earth. (American Chemical Society Monograph Series.) New York 1930. pp. 251. ill. 21*s.* net. (*Recd.* 20/2/30.)

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GRUBE, GEORG. Grundzüge der theoretischen und angewandten Elektrochemie. 2nd edition. Dresden 1930. pp. xii + 495. ill. *M.* 30. (*Recd.* 19/2/30.)

HAAS, ARTHUR. Materiewellen und Quantenmechanik. 3rd edition. Leipzig 1930. pp. viii + 202. ill. *M.* 8. (*Recd.* 13/3/30.)

HUBBARD, C. C. Drycleaning and redyeing handbook: including laboratory practice, formulas, tests and tables. Silver Spring, Md. 1929. pp. xii + 252. 20*s.* net. (*Recd.* 25/2/30.)

MCCOLLUM, ELMER VERNER, and SIMMONDS, NINA. The newer knowledge of nutrition. 4th edition. New York 1929. pp. xiv + 594. ill. 21*s.* net. (*Recd.* 8/3/30.)

PARKES, LOUIS COLTMAN, and KENWOOD, HENRY RICHMOND. Hygiene and public health. 8th edition. Revised by H. R. KENWOOD and HAROLD KERR. London 1929. pp. xii + 823. ill. 21*s.* net. (*Recd.* 20/2/30.)

RUEDY, RICHARD. Bandenspektren auf experimenteller Grundlage. Braunschweig 1930. pp. vi + 124. *M.* 9.60. (*Recd.* 14/3/30).

SOCIETY OF RHEOLOGY. Journal of Rheology. Vol. I, etc. Easton Pa., 1929 +. (*Reference.*)

SPENCER, GUILFORD LAWSON. A handbook for cane-sugar manufacturers and their chemists. 7th edition. By GEORGE P. MEADE. New York 1929. pp. xx + 560. ill. 30*s.* net. (*Recd.* 20/2/30.)

STANDARDIZATION OF TAR PRODUCTS TESTS COMMITTEE. Standard methods for testing tar and its products. London 1929. pp. xxx + 295. ill. 7*s.* 6*d.* net. (*Recd.* 25/2/30.)

TECHNOLOGY DEPT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Extra Meeting held at the Salters' Hall, St. Swithin's Lane, E.C.2 on Wednesday, March 26th, 1930, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT called upon Professor Dr. G. von Hevesy to deliver the fifth Hugo Müller Lecture entitled "The Chemistry and Geo-chemistry of the Titanium Group."

At the conclusion of the lecture, a vote of thanks to Professor G. von Hevesy was proposed by Dr. N. V. Sidgwick, seconded by Professor Arthur Smithells, and carried with acclamation, Professor Hevesy making acknowledgment.

The PRESIDENT expressed the thanks of the Society to the Master, Wardens and Court of the Salters' Company for the privilege of holding the Hugo Müller Lecture in their Hall.

ANNIVERSARY DINNER.

The Anniversary Dinner of the Chemical Society was held at the Hotel Victoria (King Edward VII Rooms) on Thursday, March 27th, 1930, at 7 for 7.30 p.m. The President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., was in the Chair, and the following Fellows, with their guests, numbering 216, were present:

Armstrong, Miss N.
Austin, P. C.
Austin, R. G.
Baker, H. B., C.B.E., F.R.S., *Past-President.*
Baker, Mrs. H. B.
Balaban, I. E.
Balaban, Mrs. I. E.
Baly, E. C. C., C.B.E., F.R.S.
Baly, Mrs. E. C. C.
Bennett, Miss D. M.
Bolton, E. R.
Borns, H.
Bowsher, R.
Bragg, Sir William H., K.B.E., F.R.S.
Bramley, A.
Bramley, Mrs. A.
Brooke, R. W.
Bryans, Frank.
Buckle, E. A.
Buckle, Mrs. E. A.
Bunker, S. W., D.S.O., M.C.
Burch, W. J. N.
Calvert, H. T., M.B.E.
Calvert, Mrs. H. T.
Campkin, H. T.
Caney, J. G.
Caney, Mrs. J. G.
Carlton, Miss M.
Carr, S. E., *Assistant Secretary.*
Challenger, F.
Challenger, Mrs. F.
Chapman, A. Chaston, F.R.S.
Chapman, Mrs. A. Chaston
Chapman, A. W.
Chibnall, A. C.
Chorlton, Alan, *Vice-President, The Institution of Mechanical Engineers.*

Clayton, G. C., C.B.E., *President, The Institute of Chemistry.*
Clemo, G. R.
Clifford, F. W., *Librarian.*
Coates, J. E., O.B.E.
Colwyn, Right Hon. Lord, P.C.
Corder, Rev. B. J.
Corder, Mrs. B. J.
Corder, Miss.
Corsellis, D. H.
Coste, J. H.
Coste, Mrs. J. H.
Coste, Miss.
Coste, J. H., jun.
Crowther, E. M.
Daily Telegraph, The
Donald, Miss G. H.
Donald, M. B.
Donald, Mrs. M. B.
Donnan, F. G., C.B.E., F.R.S., *Foreign Secretary.*
Donnan, Miss J. E.
Drakeley, T. J.
Drakeley, Mrs. T. J.
Drummond, J. C.
Dudley, H. W., O.B.E.
Dunn, J. T., *President, The Society of Public Analysts.*
Dunstan, A. E., *President, The Institution of Petroleum Technologists.*
Dyer, Bernard.
Dyer, Mrs. B.
Eastman, Cyril, *President, The Society of Dyers and Colourists.*
Eldridge, A. A.
Eldridge, Mrs. A. A.
Elkington, H. Douglas.
Ellingham, H. J. T.
Evans, C. Lovett.
Eyre, J. Vargas.
Eyre, Mrs. J. V.
Farmer, E. H.
Farmer, R. C.
Fisher, Miss N. I.
Freeth, F. A., O.B.E., F.R.S.
Garner, F. H.
Garner, W. E.
Gates, Percy, *President, The Institute of Brewing.*
Gibson, C. S., O.B.E., *Secretary.*
Goldsmith, J. N.
Gray, W. H.
Greenaway, A. J.
Greeves, A.
Gunn, A. Rugg.
Haas, Paul.
Hamer, F. E.
Hamer, Miss F. M.
Hamer, S. H.
Hamer, Sir William, Kt.
Harden, A., F.R.S.
Haskew, R. S.
Haskew, Mrs. B. C.
Hele, T. Shirley, *Chairman of Committee, The Biochemical Society.*
Henry, T. A., *Vice-President.*
Henry, Mrs. T. A.
Hevesy, G. von, *representing the Deutsche Chemische Gesellschaft.*
Hill, C. A., *Vice-President, The Association of British Chemical Manufacturers.*
Hinks, E., M.B.E.
Hooker, Mrs. A. H.
Hooper, D.
Hope, E.
Hopkins, Sir F. Gowland, Kt., F.R.S.
Hopkins, Lady.
Hunt, Miss.
Ingold, C. K., F.R.S.
James, T. C.
Jowett, H. A. D.
Jowett, Mrs. H. A. D.
Keen, W. B.
Kenner, J., F.R.S.
King, H.
King, Mrs. H.
Leitch, Miss G. C.
Le Pla, Miss M., *Indexer.*
Lessing, R.
Lessing, Mrs. R.
Levinstein, H., *President, The Society of Chemical Industry.*
Levinstein, Mrs. H.
Linstead, R. P.
Louis, Henry, *President, The Iron and Steel Institute.*
Lowndes, J.
Lowry, T. M., C.B.E., F.R.S., *President, The Faraday Society.*
Lund, Kenneth F.
McCombie, H., D.S.O., M.C.
Maclean, H.
Maclean, Mrs. I. S.

Macnab, W., C.B.E.
Mallen, Miss C. E.
Menzies, R. C.
Miall, S.
Micklethwait, Miss F. M. G., M.B.E.
Micklethwait, R. G.
Milne-Watson, Sir David, Kt., *President, The Institute of Fuel.*
Mills, W. H., F.R.S., *Vice-President.*
Mitchell, A. D., *Assistant Editor.*
Mitchell, Mrs. A. D.
Moore, T. S., *Secretary.*
Moore, Mrs. T. S.
Morris, H. J.
Napier, O. J. W.
Napier, Mrs. O. J. W.
Newbery, A. D.
Nierenstein, M.
Osman, A. A.
Paget, H.
Parker, A.
Parker, Mrs. A.
Parry, L. Moreton, *President, The Pharmaceutical Society.*
Pentreath, Rev. G.
Pentreath, Mrs. G.
Perkin, A. G., F.R.S.
Philip, J. C., O.B.E., F.R.S., *Vice-President.*
Philip, Mrs. J. C.
Philip, W. E.
Plenderleith, H. J., M.C.
Plenderleith, Mrs. H. J.
Plimmer, R. H. A.
Plimmer, Mrs. R. H. A.
Pownall, Mrs.
Price, T. Slater, O.B.E., F.R.S., *Treasurer.*
Pyman, F. L., F.R.S., *Vice-President.*
Raistrick, H.
Raistrick, Mrs. H.
Rawling, S. O.
Reavell, J. Arthur, *President, The Institution of Chemical Engineers.*
Rintoul, W., O.B.E.
Robertson, A.
Robertson, Mrs. A.
Robertson, Sir Robert, K.B.E., F.R.S., *Treasurer, The Royal Institution.*
Robertson, Lady.
Robinson, R., F.R.S.
Robinson, Mrs. R.
Rowe, F. M.
Rowe, Mrs. F. M.
Rowlands, M. J.
Sanderson, J.
Scott, Alexander, F.R.S., *Past-President.*
Seligman, R., *President, The Institute of Metals.*
Seligman, Mrs. R.
Sharp, T. M.
Sidgwick, N. V., O.B.E., F.R.S.
Simonsen, J. L.
Simonsen, Mrs. J. L.
Smith, Clarence, *Editor.*
Smith, F. E., C.B., C.B.E., Sec.R.S., *Secretary, Advisory Council, Department of Scientific and Industrial Research.*
Smith, T. B.
Smithells, A., C.M.G., F.R.S., *Vice-President, The Institute of Chemistry.*
Solomon, W.
Sommerville, David.
Spencer, J. F.
Spielmann, P. E.
Thomas, R. N. Garrod.
Thorpe, J. F., C.B.E., F.R.S., *President.*
Thorpe, Mrs. J. F.
The Times.
Topley, W. W. C.
Topley, Mrs. W. W. C.
Turner, Miss E. G.
Turner, G. W.
Vernon, W. H. J.
Voelcker, J. A., C.I.E.
Voelcker, Miss W.
Wargrave, Right Hon. Lord, P.C., *Prime Warden, The Goldsmiths' Company.*
Whiteley, M. A., O.B.E.
Whitmarsh, W.
Wiese, L.
Wiese, Mrs. L.
Wiese, Miss.
Wilson, Sir Arnold T., K.C.I.E., C.S.I., C.M.G., D.S.O.
Wilson, F. J.
Woolcock, W. J. U., C.B.E.
Worsley, Mrs. G. le Geyt.
Wynne, W. P., F.R.S., *Past-President.*
Young, F. G.

The following Toasts were proposed :

1. The King.

2. The Queen, the Prince of Wales, and the other Members of the Royal Family.

3. "The Chemical Society," coupled with the name of the President. By SIR DAVID MILNE-WATSON, Kt., M.A., LL.D., D.L., President of the Institute of Fuel.

4. "The Central Building," coupled with the name of SIR ARNOLD T. WILSON, K.C.I.E., C.S.I., C.M.G., D.S.O. By DR. HERBERT LEVINSTEIN, M.Sc., F.I.C., President of the Society of Chemical Industry.

5. "The Guests," coupled with names of :

(*a*) Professor DR. GEORG VON HEVESY, representing the Deutsche Chemische Gesellschaft.

(*b*) CHARLES A. HILL, Esq., B.Sc., F.I.C., Vice-President of the Association of British Chemical Manufacturers. By A. CHASTON CHAPMAN, Esq., F.R.S., F.I.C.

After the Loyal Toasts had been honoured, SIR DAVID MILNE-WATSON, in proposing the toast of "The Chemical Society," said :

"I consider it a very great honour indeed that I have been asked to propose the toast of the evening, namely, that of the Chemical Society. I am no chemist myself. The only claim to chemistry that I have is that I have been, and still am, President of the Association of British Chemical Manufacturers and I am also the head of a Company which manufactures a large number of chemicals.

"I admit that for to-night I have no prepared speech, but I have found, at any rate, that the chemists amongst your members are very human. When I came into the room to-night I said to Professor Smithells, 'I have no prepared speech,' and he offered to sell me one—at a price ! Well, to be serious, I am glad to propose this toast, for I have a very great admiration for the splendid record of work done by the Society, which has been honoured by many great names, such as Lord Playfair, Sir William Ramsay and the two Professors Perkin. These last names have had a very great interest for the industry with which I am connected. It is a great regret to think that Professor W. H. Perkin is no more with us to take an interest in your affairs.

"For your work I am full of admiration. Your Secretary provided me a day or two ago with some details about that work, but far be it from me to inflict them upon you to-night. He told me the exact number of words the *Journal of the Chemical Society* contained. It ran into hundreds of thousands, most of which, I believe, have

been written by your worthy President. I was positively staggered. Then I found that you have published a number of valuable research abstracts. I cannot imagine any more useful work that you do than that of publishing those abstracts. They also ran into thousands of words, but they were obviously not all written by my friend Professor Thorpe. Joking apart, however, I do consider that the money which your Society spends in publishing these contributions is very well spent indeed. It is increasingly difficult for all who are engaged in industry and science to keep abreast of the times. I realise, as the head of a business such as the one I am connected with, how difficult it is to know what is going on in the world of science, and I consider that your Society is rendering an enormous service to us in industry and to all those who are engaged in technical work by these publications. My feeling about chemistry is that unless you are absolutely up-to-date it is no use at all. I have recollections of paying visits to chemical works where I saw white elephants in the shape of plant. You have not to go very far to find plants which have been erected only a year or two too late. Had the management had the courage to put them up sooner, or had they only realised earlier the advantages of some great discovery, they might have made a fortune, but a few months or a few years later there was no profit in it. I remember one particular chemical substance which we used to make and sell with great profit at four shillings a pound. Within a few months we were very glad to get three-halfpence a pound for that substance. That is what is happening in all directions in the chemical world. Unless you are really first in the field, and prepared to take advantage quickly of any new discovery, you probably find that you are too late.

"In an assembly of this kind it would be perfectly ridiculous of me to extol the merits of chemistry. You live in it, you have your being in it, you make your daily bread by it, and you no doubt regard it as the most important thing in the world. But as a layman in your midst I do say, without fear of contradiction, that there is no doubt that in chemistry lies the solution of a great many of the problems that face mankind. Whatever may happen, there is no doubt that in the future chemistry will play a greater part in supplying the wants of mankind. In the industry in which I am engaged we know that quite well, because we produce many by-products. We see synthetic industries springing up everywhere, and so we see any chance of producing those by-products at a profit disappearing. It is the natural current of events, and mankind will benefit by the cheapening of products required for daily necessities. I do not think there is

any need for me to amplify that subject any further, or to say more than that I believe all of you are convinced that chemistry is important and that your Society is one of the greatest influences in this country.

"It only remains for me to ask you to drink to the prosperity of the Chemical Society, coupling with the toast the name of my friend Professor Thorpe. He needs no words of commendation from me. He is one of the mainstays of the Chemical Society and the chemical industry generally. Those of us who know him are very fond of the Professor, and we are very glad to see him in this position to-night. We wish the Society all success and all prosperity in its work."

The PRESIDENT, in responding, said :

"Before replying to the very kind speech which Sir David Milne-Watson has made, there are a few matters in connection with the affairs of the Society to which I should like to call your attention.

"Although it is not my task to propose the toast of the guests—that is in other and more competent hands—I do want to express our thanks to certain of the guests who are with us to-night, and especially to Professor von Hevesy, to whose admirable lecture yesterday we listened with the greatest interest. Unfortunately—I say unfortunately advisedly—he is the one surviving member of a very distinguished band, because we had hoped to have with us at this dinner all our new German members. For one reason or another they were unable to come, and we therefore asked the German Chemical Society to send a representative who could speak on their behalf, and they sent Professor von Hevesy. I have here many letters from those foreign members explaining the reasons for their absence. We have with us, however, the Nobel Laureates, Sir F. Gowland Hopkins and Professor A. Harden, whom we are exceedingly glad to welcome, and we congratulate them on the high honour bestowed on them and bestowed also, I think we may justly claim, on chemistry. I would also like to welcome Mrs. Hooker, representing Mr. A. H. Hooker, who has recently given us a very valuable acquisition which for many years to come will be carefully guarded. I am sorry to say that Mr. Hooker has had to undergo an operation, and we shall all wish to convey to him through Mrs. Hooker our great sympathy and our best wishes for a speedy recovery. To-night we have with us personally a number of members of the constituent bodies who are combined together in the central building project. Again it is not my business to deal with the central house, because that is a special toast in itself, but I should like to say how glad we are to see them

here to-night and to welcome them, because we regard this as a great augury for the future.

"We ourselves have to leave our premises in Burlington House because we have outgrown them. We cannot expand further without bursting out the walls. A change is inevitable, and we have to face it. In that connection I may say that I am Chairman of the Appeal Committee and I have to go round gathering what substance I can. I am in the position of what I think physical chemists call an electron sink. I have to seek some electron in order that I may combine with him or it and produce a compound. Unfortunately, they are usually unsaturated compounds, and unsaturated compounds in the human sense are no use for the purpose. Moreover, we are likely to become more unsaturated from the human point of view as time goes on, and probably by the middle of next month we shall not only have parted with all our electrons, but they will come and take our protons as well. Be that as it may, the collection of funds is likely to produce a certain amount of difficulty in the near future. We as chemists are very loath to leave our admirable quarters in Burlington House, which we have occupied now for fifty-five years, and to go into other quarters in some far-away district such as Westminster, which is inhabited, I understand, mainly by engineers and politicians. However, I do not think the chemist will do any harm to the engineer, and the engineer is certain to do a great deal of good to the chemist. Whether the politician is likely to be improved by either I cannot say. I have been told that organic chemistry, the subject with which I deal, is a dead science. I have also been told, or at least I have read in the newspapers, that there is only one organic chemist left in England. I have never seen the corpse of organic chemistry, and I am not prepared to swear to its identity, and I think it is quite possible that those people who have recorded its death would not be in a position to recognise organic chemistry if they saw it. The mind stands appalled at the contemplation of such an awful picture as that of the last organic chemist in England watching the corpse of the dead science like, shall I say, some Robinson Crusoe. I will leave it at that.

"Nothing more remains for me but to thank you for the manner in which you have received the toast and Sir David Milne-Watson for the way in which he proposed it."

The toast of "The Central Building" was proposed by Dr. Herbert Levinstein, who said:

"I hope, ladies and gentlemen, that you will forgive me for

butting in with this toast and standing for a moment or so between you and Sir Arnold Wilson. It is indeed a great honour to have been entrusted with this toast, for which there is so much competition this evening. A central building appears to imply central heating, a topic that might at some time interest Chemists, and so the President of the Institute of Fuel would be a more suitable person than myself to propose it. It seems, however, a very unsubstantial topic. The fabric, being unsubstantial at the moment, has no interior, and therefore I suppose its health should be good. Having no interior—indeed no exterior—it can have no bacteria. When completed it will, I am sure, have no superior.

"Speaking as President of the Society of Chemical Industry, I should like, on behalf of that Society, to express our grateful thanks to the President of the Chemical Society for the very statesmanlike and constructive address which he delivered on the subject of closer co-operation between the various chemical societies. When I first knew your President he was a finished cricketer and a very promising organic chemist. He is now, I am sorry to say, a completely finished cricketer and a very finished but—as he has taken the trouble to tell us all to-night—a by no means completely finished organic chemist. I would like you to understand, ladies and gentlemen, that the scheme for co-operation between our great Societies is one on which no previous consultation between the Councils or the officials of the Societies took place. This is a scheme which is as new to me as it will be, no doubt, to all our members. But it is a scheme with which everyone who has the future of science and industry at heart will be most completely in sympathy and general agreement. There is no doubt whatever that a central building of the kind which was described to us this afternoon will be of vital importance both to our clients and also to the chemical industry.

"I will not take up your time by making a long speech on the subject, but I would like to call your attention to some aspects of it. In the first place, we have in the conduct and publications of our Societies to legislate and cater not only for the needs of chemists in this country, but also for the needs of British chemists in various parts of the Empire. It is of the highest importance that British publications should be those which are read by British chemists working in foreign countries and in various parts of the Empire, and that they should not be compelled, owing to lack of co-operation or lack of funds, to rely on the publications of other countries, however admirable those publications may be. For national and imperial reasons, therefore, I think that it is vital that chemists should be able to come to us here in London for

their publications rather than go to the great Societies in other countries.

"Then, ladies and gentlemen, we need here in London a meeting ground for chemists and industrialists from all parts of the Empire. The chemist or industrialist working in distant parts of the Empire takes his leave sooner or later and comes to London. At present there is no central building where he can consult with engineers and chemists working on lines similar to his own, although it is vital to him that he should be able to do so. From that point of view alone it is important that we should have a central building and a central library. For the chemist living and working in London the advantages of the scheme are obvious, but they are no less great to the chemists who live and work in the provinces, and who form the greater part, probably, of the members of the Society of Chemical Industry, and no doubt also of the Chemical Society. It is of great importance that there should be a central administration of our journals, leading to that reduction of costs and consequent reduction of subscriptions to which reference has been made by the President. I entirely agree with what he has said on that point, and its value to our members. In that connection may I say that it is with very great pleasure that I see Lord Colwyn not far from me. We are losing many members from the Society through the centralisation of factories and businesses, because in recent years it has become the practice for the young research chemist to go into the Works Library and consult current literature in the firm's time and at the firm's expense. Speaking with experience from both sides, I think that is an utterly improper use of Works Libraries. The Works Library should be equipped with works of reference which the chemist can use in connection with his work, but it is the business of the young chemist to keep abreast of the literature of the day in his own time and at his own expense. I am afraid there is too much of a tendency now to think that when five o'clock or five-thirty comes the day's work is over. Lord Colwyn and others will tell you that the chemical industry of this country and other countries was not built up on any idea of that kind. I hope, therefore, the heads of the great research organisations of this country will discourage chemists from using the Works Libraries for the purpose of reading the journals of the Chemical Society and of the Society of Chemical Industry, and encourage them to become members of those societies. I hope shortly there will be a joint membership, and that that will encourage chemists to keep abreast of progress in their profession in their own time and at their own expense.

"I have great pleasure in coupling with the toast the name of

Sir Arnold Wilson, the great protagonist of the scheme, though he only became associated with the chemical industry owing to the great war. Sir Arnold Wilson is one of the most interesting personalities in London. A soldier and a scholar—a soldier by profession, a scholar by instinct and inheritance—by nature a fighter. We are fortunate in finding him to carry through this scheme. I give you the toast of the 'Central Building,' coupled with the name of Sir Arnold Wilson."

Sir Arnold Wilson responded, saying:

"May I begin by thanking Dr. Levinstein for his kindly personal references, and ask your permission to say a few words about the central building scheme?

"It deals with the great industries of this country—mining and metallurgy, chemistry, fuel, oil and rubber. Our object is to bring together not merely the technical societies connected with those great industries, but also, as tenants in the building and in the closest co-operation, the producing societies. We want to bring together not merely the chemical societies, but such organisations as the National Federation of Iron and Steel Manufacturers, the Mining Association of Great Britain and organisations of that character. It is my belief, speaking as a layman, that the economic position in this country will be facilitated by having the scientific and technical sides of industry more closely united with the manufacturing and selling sides.

"I should like to say a word or two in defence of the young chemist. The truth is that the young chemist cannot afford membership of all these societies. I have no doubt that he is a member of one, but not more than one, and my hope is that when this scheme is developed it will not be a question of whether you can afford to be a member, but whether you can afford not to be a member. There will be a great increase in membership in the long run.

"This is not simply a business scheme for getting twelve societies together. It is much more than that. Our hope is that when the new building is completed science as applied to industry will acquire a new and improved status. You will be close to Westminster, in close touch with the manufacturing side and in communication with each other. It will be no longer possible for the public at large to regard scientific men as a class apart. You will be far more closely in touch with the national life than you can be if you are scattered over a circuit of London almost as big as the Inner Circle. The effect of frequently meeting your colleagues in other branches of science and industry will be of great importance. The fact of meeting those who have to handle the products with which

you are so familiar will have a certain importance, and your proximity to Westminster will also have a certain importance. I hope that the façade of the building will represent something of the dignity of science. There can be no question that, as Dr. Levinstein, Sir David Milne-Watson and Professor Thorpe have all said, the scheme will be of great value to chemistry and of great value also to metallurgy and the various other industries, including rubber and fuel, connected with the scheme. I believe the scheme will be of great value to the nation, because Great Britain depends as no other nation in the world depends upon the successful application of science to industry. I can say that in two or three years' time, when you have this building in being, with its central library, the young chemist will be able to get much more for his money than ever before. By housing the twelve societies in one building and getting their libraries under one roof, it will be possible to convert them from reference libraries into lending libraries. That will be one of the benefits. Another result of co-operation and combination will be that the journals and abstracts will be in a form which will make it far easier for the young chemist, and for that matter for the old chemist, to find what he requires. In the new library there will be, I hope, a Bureau of Information, which will be able to provide a man with precisely what he requires in the minimum of time and without expense.

"Before I conclude my remarks, I want to thank those who have contributed so enormously to the initial success of this movement. First and foremost I should like to thank those firms and individuals who gave us substantial assistance and encouragement at the very beginning, when the whole success of the scheme hung in the balance. Secondly, I would say, although I should not like it to be spoken about outside or printed or published, that when this scheme began the chemists were not in it. It was not until the chemists came in that the scheme got a real move on. The extraordinary energy and enthusiasm of Professor Thorpe has resulted in the burden of the scheme being carried, not by me or by any individual, but by a little group of men who centre round Professor Thorpe. I am sure your imagination will be equal to evolving some chemical formula depicting Professor Thorpe as the embodiment of energy and at the same time the centre of a number of small but useful electrons. For all the secretarial work that has to be done, the hard work of getting people together and keeping correspondence in order is being done by your Assistant Secretary, and nobody else, and we owe a great debt to Mr. Carr. May I finally express my personal thanks, and I am sure the thanks of us all, to the newspapers who have given us so much of their valuable space and so

much intelligence. Whenever any reference has been made to this scheme for a central building they have given it gratifying and invaluable prominence. They did it, I believe, because they regarded the project as one of public importance. We are not trying to do anything which has not been done before. The United States of America have had a similar scheme, and Germany has its own Chemistry House. France has had no difficulty in getting a grant of a million and a half francs for the construction of the Maison de Chimie. Our own Chancellor of the Exchequer, I am sure, would far sooner see this scheme developed and brought to a successful conclusion by the individual efforts of the members of the Societies concerned and of those firms who benefit from the activities of the Societies. Do not let us be beholden to anybody else. Let us feel that we have built the temple ourselves alone. When this scheme is completed I am sure you will look back on this day, when for the first time your President has mentioned it and it has appeared on the Toast List, as being a memorable occasion."

Mr. A. Chaston Chapman proposed the toast of the guests. He said :

" We cannot allow our guests to leave us without expressing to them our appreciation of the honour they have done us in accepting our invitation and of telling them how much they have added to our pleasure by their presence here to-night. I have, in a long experience of Dinner Committees, often heard it suggested that for some good reason this or that toast might be conveniently omitted, but never in the whole of my experience have I heard it suggested that the toast list should be shortened at the expense of the toast which it is my pleasure to present to you to-night.

" Much as I should like to refer individually to each of our guests, I feel sure you will realise that that is quite impossible, and if I do not, I hope that our guests will understand that this is due solely to pressure of time, and that we desire to extend to each the same friendly greeting and the same hearty welcome.

" In the first place, I would extend to the ladies who have honoured us by their presence here to-night a very warm welcome. We hope they have enjoyed our entertainment as much as we have enjoyed their company.

" Our list of guests is a long and very distinguished one, and it includes representatives of almost every branch of our science and of a considerable number of its more important applications.

" In Lord Colwyn we welcome one who represents, among his many and varied activities, a number of industries which are either

entirely chemical or in which chemical science plays an all-important and ever-increasing part. I think it may safely be said that there are very few persons who are better able to appreciate all that chemistry means to industry than Lord Colwyn, and, I may add, Sir David Milne-Watson, whom we are also happy to have with us to-night. Unfortunately, Lord Melchett was not able to accept our invitation to be present. If he had been here we should have had an illustrious trio.

"We have with us the reigning Presidents and other officers of a number of scientific and technical societies and institutions, many of which are constituent organisations in connection with our appeal for a central building devoted to chemistry. All these we are happy to welcome, not merely as our official guests, but also as our personal friends and colleagues, and I should like especially to refer to one of the latest of our Honorary Fellows, Sir William Bragg, Director of the Royal Institution, and friend of us all.

"Sir Frederick Hopkins and Prof. Harden come to us with the Nobel laurels fresh upon their brows. We are happy that these fellow-countrymen and old friends of ours should have received this high award, and we are especially gratified that the honour should have been paid to the representatives of one of the youngest branches of our science, but which is rapidly becoming one of the most important.

"The City Companies are represented by Lord Wargrave, the Prime Warden of the Goldsmiths' Company, and we are happy too to have with us representatives of the Civil Service and of Government Departments, as well as some leading Captains—or perhaps I ought rather to say Field-Marshals—of industry. To all these gentlemen I desire to offer on behalf of the Society a very hearty welcome, and to tell them how greatly we appreciate their presence with us to-night.

"On an occasion such as this we feel that our table is never complete unless we have with us one or more of our foreign colleagues. To-night we are very happy to be able to welcome Prof. von Hevesy. Not to everyone is it given to discover a new element, but this and other outstanding contributions which Prof. von Hevesey has made to chemical science are so well known to you that any further reference is quite unnecessary, even if this were an appropriate occasion. I will content myself with saying that we consider ourselves very fortunate that Prof. von Hevesy, who is representing the Deutsche Chemische Gesellschaft, should have found it possible to dine with us to-night, and we desire to welcome him not only as a very distinguished colleague, but as one

who knows us well and who numbers many Englishmen among his personal friends. We hope he will take back with him very pleasant memories of his visit.

"We welcome in Mr. C. A. Hill one who has rendered yeoman service to chemical industry. Mr. Hill is an old friend of most of us, and all who know him will agree that he combines in his person the qualities of a man of science with those of an outstanding organiser and administrator, a combination which is by no means very common. The fact that Mr. Hill is Vice-President of the Association of British Chemical Manufacturers is sufficient evidence of the position he occupies in the world of manufacturing chemistry, and I should just like to express to him the gratitude which all chemists must feel for the very active part he played in connection with the manufacture of fine chemicals. He has done, in fact, very much to render us to a great extent independent of foreign analytical and research chemicals.

"We hope that all our guests have spent a very pleasant evening, and I ask you to drink to their healths."

Professor Dr. Georg von Hevesy, responding, said :

"I want to thank you, Mr. President, and the Council of your Society, most warmly for your kind invitation. I have spoken to a number of my friends in Germany about this occasion, and they were all unanimous that no Society could arrange so well a festive gathering. Every foreign visitor comes to such a gathering as this with the greatest pleasure. Whenever I have asked my friends who have been to London what struck them most, the answer has always been that in London they saw the capital of Parliamentarianism. There were some who associated London with the great financial centre of the world, but I, in coming to London, think of the great British chemists. It is unnecessary to recall that the German Chemical Society was founded on exactly the same lines as your own Society, and I was asked by the President and Council of my Society to bring you their best greetings and their most sincere wishes for your future. The recent visits of Sir Ernest Rutherford and of your President and Senior Secretary were a source of especial pleasure and gratification to us. You have had great names in the past—Sir William Ramsay, Professor Perkin and others—but no one perhaps who did so much for the fundamental interest of chemistry as Sir Ernest Rutherford. I am sure that the Chemical Society will maintain its great traditions."

Mr. Charles A. Hill, who also responded, said :

"More than one of the speakers to-night has referred to the part

which chemical manufacturers play in the industrial world to-day. I have been privileged within the past week to be present as a humble spectator and listener at a discussion on chemical catalytic reactions under high pressure, and no one who heard that discussion could have been left in any doubt as to the essential 'oneness' of the problem of the fundamental nature of all chemical reactions. As contributors to the discussion, we had scientific professors recounting their work in their laboratories, chemical industrialists tackling the same problems in large-scale operations. No one can doubt that there is only one chemistry, and that is chemistry. On behalf of chemical manufacturers I would say that we understand the debt which the present generation owes, and that all posterity will owe, to scientific discoverers; and we also appreciate the part which you, Mr. President, Sir Arnold Wilson, and the other prime movers or lubricants or whatever they are are playing in the project for Central House. That project, when it is accomplished, will, we trust, help to abolish the artificial barrier which has existed for too long between what is called 'pure chemistry' and what is called 'applied chemistry.' May I, on behalf of the guests, express our deep appreciation of the hospitality which you have extended to us this evening and our gratitude for your kindly thought in welcoming us by a special toast?"

Ordinary Scientific Meeting, Thursday, April 3rd, 1930, at 8 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on March 26th, of Frederick William Tompson, who was elected a Fellow of the Society on February 26th, 1884.

It was announced that the following Committees for 1930–1931 had been appointed by the Council:

Finance Committee: J. L. Baker, F. P. Dunn, C. A. Hill, E. S. Mond, J. C. Philip, F. L. Pyman, W. Rintoul, and the Officers (Treasurer as Chairman), with the Assistant Secretary as Secretary.

House Committee: J. L. Baker, Sir Herbert Jackson, Sir William J. Pope, Sir Robert Robertson, Alexander Scott, J. M. Thomson, and the Officers, with the Assistant Secretary as Secretary.

Library Committee: J. J. Fox, T. A. Henry, J. R. Partington (Chairman), S. W. Smith, J. F. Spencer, H. Terrey, and the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

Publication Committee: H. Bassett, G. M. Bennett, H. V. A. Briscoe, H. M. Dawson, A. C. G. Egerton, J. J. Fox, A. J. Greenaway, W. N. Haworth, T. A. Henry, J. T. Hewitt, C. N. Hinshelwood, C. K. Ingold, J. Kenyon, H. King, W. H. Mills, J. C. Philip, F. L. Pyman, E. K. Rideal, R. Robinson, N. V. Sidgwick (Chairman), J. L. Simonsen, S. Smiles, S. Sugden, and the Officers, with the Editor as Secretary.

Research Fund Committee: A. J. Allmand, J. E. Coates, W. N. Haworth, I. M. Heilbron, G. G. Henderson, C. K. Ingold, A. Lapworth, W. H. Mills, Sir Robert Robertson, N. V. Sidgwick, and the Officers, with the Assistant Secretary as Secretary.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Colin Henry Beale, B.Sc., 22, South Street, Dorchester, Dorset.
Frederick Howard Brain, B.A., B.Sc., 63, Maids Causeway, Cambridge.
Erich Clar, Dr. Ing., Via G. Colombo 81, Milan, Italy.
Joseph Needham Kilby, Wildfell, Morthen, Thurcroft, Rotherham.
Kozo Miki, University College, Gower Street, W.C.1.
Cedric Burton Radcliffe, M.Sc., 46, Carlton Gore Road, Auckland, New Zealand.

The following form of recommendation for Fellowship has been authorised by the Council for presentation to ballot under Bye-Law I (2):

Ratilal Maneklal Gandhi, Bansda, Bombay Presidency, India.

The following papers were read:

"The essential oil of *Backhousia Angustifolia*. Part II. The isolation of naturally occurring β-diketones; angustione and dehydroangustione." By C. S. Gibson, A. R. Penfold, and J. L. Simonsen.

"Attempts to prepare cyanine dyes from quaternary salts of 2-methylacenaphthpyridine and of *ms*-methylacridine." By (Miss) F. M. Hamer.

"The production of fog in the neutralisation of alkali with hydrogen halides. Part II. The significance of the presence of ammonia." By R. W. Aldis and J. C. Philip.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part XII. Absorption spectra." By C. S. Gibson, E. S. Hiscocks, J. D. A. Johnson, and J. L. Jones.

THE FARADAY LECTURE.

The Faraday Lecture, entitled "Chemistry and the Quantum Theory," will be delivered by Professor Dr. Niels Bohr, For. Mem. R.S., at the Salters' Hall, St. Swithin's Lane, E.C.4, on Thursday, May 8th, 1930, at 5.30 p.m. (by kind permission of the Master, Wardens, and Court of the Salters' Company).

Admission will be by ticket only. The seating accommodation is limited, and Fellows should apply without delay to the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, W.1. Applications for more than one ticket will be dealt with in the order they are received.

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Monday, June 2nd, 1930. Applications from Fellows will receive prior consideration.

All persons who received grants in June, 1929, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 2nd.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

List of Papers, or Abstracts thereof, received between March 20th and April 3rd, 1930. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Some aromatic arsenic compounds containing nuclear substituent sulphur groups." By H. J. Barber.

"The constitution of santonin. Part II. The synthesis of racemic desmotroposantonin." By G. R. Clemo, R. D. Haworth, and E. Walton.

"The scission of diaryl ethers and related compounds by means of piperidine. Part IV. Elimination of halogen atoms and scission reactions during substitution processes." By D. L. Fox and E. E. Turner.

"Ortho- and meta-derivatives of simple alkylphenyl-ketones." By L. A. ELSON, C. S. GIBSON, and J. D. A. JOHNSON.

"The syntheses of glucosides. Part IV. Alizarin glucoside." By A. ROBERTSON.

"Some derivatives of *m*-xylene." By E. G. BOYCE, W. P. RANKINE, and A. ROBERTSON.

"The co-ordination compounds of oximes." By O. L. BRADY and M. M. MUERS.

"The formation of phenoxazines." By O. L. BRADY and C. WALLER.

"The mechanism of the formation of benziminazoles." By M. A. PHILLIPS.

"The polysulphides of the alkali metals. Part I. Sodium. Part I." By T. G. PEARSON and P. L. ROBINSON.

"The preparation of some diphenyl ethers." By R. V. HENLEY.

"Conversion of hydroaromatic into aromatic compounds. Part IV. The influence of the nitro-group in phenyldihydroresorcinol." By L. E. HINKEL and J. F. J. DIPPY.

"A general (exact) equation to the potentiometric titration curve." By B. CAVANAGH.

"Studies of electrolytic polarisation. Part IX. Complex cyanides: zinc, cadmium, and mercury." By S. GLASSTONE.

"The preparation of compounds analogous in structure to sulphinic acids but containing *p*-toluenesulphonimido-groups in place of oxygen atoms. Phenyl and methyl *p*-toluenesulphonimido-sulphine-*p*-toluenesulphonylimines." By S. G. CLARKE, J. KENYON, and H. PHILLIPS.

"Glucosides. Part III. The abnormal replacement of halogen in glucosyl halides: the formation of β-glucosides from β-glucosyl chlorides." By W. J. HICKINBOTTOM.

"The influence of dissolved salts on the mutual miscibility temperature of liquid systems. Part I. The systems—water with (*a*) *n*-butyric acid, (*b*) *iso*butyric acid, (*c*) phenol." By W. H. PATTERSON.

"The solubilities of nitrophenols in aqueous ethyl-alcoholic solutions. Indications of alcohol–water complexes." By J. C. DUFF and E. J. BILLS.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

CERCHEZ, VASILE TH. Recherches sur l'ether aminomalonique et quelques-uns de ses dérivés. Lyon 1929. pp. 173. (*Recd.* 10/3/30.) From the Author.

CHAMOT, ÉMILE MONNIN, and MASON, CLYDE WALTER. Handbook of chemical microscopy. Vol. I. Principles and use of microscopes and accessories. Physical methods for the study of chemical problems. New York 1930. pp. xiv + 474. ill. 22*s*. 6*d*. net. (*Recd*. 17/3/30.)

From the London Publishers : Messrs. Chapman & Hall.

CHAPLET, A. Où en est la chimie industrielle? Paris 1928. pp. viii + 288. ill. 25 *fr*. (*Recd*. 21/3/30.)

COLLOID SYMPOSIUM ANNUAL. (Formerly Colloid Symposium Monograph.) Papers presented at the 7th Symposium on Colloid Chemistry, Johns Hopkins University, June 1929. New York 1930. pp. viii + 300. ill. 22*s*. 6*d*. net. (*Recd*. 17/3/30.)

From the London Publishers : Messrs. Chapman & Hall.

DUPONT, G. Les essences de térébenthine. Paris 1926. pp. 332. ill. 24 *fr*. (*Recd*. 21/3/30.)

FRIMAUDEAU, S. La soudure électrique a l'arc métallique. Paris [1924]. pp. vi + 135. ill. (*Recd*. 21/3/30.)

GEDROIZ, K. K. Chemische Bodenanalyse. Translated from the Russian by L. FREY. Berlin 1926. pp. xii + 245. *M*. 12. (*Recd*. 21/3/30.)

MEZGER, ROBERT, and PISTOR, FRIEDRICH. Die Reaktionsfähigkeit des Kokses. Ihre Ursachen, alte und neue Wege zu ihrer Bestimmung. Halle (Saale) 1927. pp. viii + 88. ill. (*Recd*. 21/3/30.)

MILLIS, CHARLES THOMAS. Technical education, its development and aims. London 1925. pp. viii + 183. 6*s*. net. (*Recd*. 21/3/30.)

MOLITOR, HEINRICH. Die Fabrikation der Soda. Leipzig 1925. pp. xvi + 231. ill. *M*. 11.60. (*Recd*. 21/3/30.)

MULLER, ERICH. Die elektrometrische Massanalyse. Dresden 1921. pp. viii + 110. ill. (*Recd*. 21/3/30.)

ORGANIC SYNTHESES : an annual publication of satisfactory methods for the preparation of organic chemicals. Vol. X. New York 1930. pp. viii + 119. ill. 8*s*. 6*d*. net. (*Recd*. 17/3/30.)

From the London Publishers : Messrs. Chapman & Hall.

RIDEAL, SAMUEL, and associates. The carbohydrates and alcohol. London 1920. pp. xvi + 219. ill. 12*s*. 6*d*. net. (*Recd*. 21/3/30.)

SMITH, PAUL I. Glue and gelatine. London 1929. pp. x + 162. ill. 8*s*. 6*d*. net. (*Recd*. 21/3/30.)

STEINER, O. Industrie der Fette und Seifen. Dresden 1925. pp. viii + 83. *M*. 4. (*Recd*. 21/3/30.)

WARE, JOHN C. The chemistry of the colloidal state : a textbook for an introductory course. New York 1930. pp. xiv + 313. ill. 18*s*. 6*d*. net. (*Recd*. 17/3/30.)

From the London Publishers : Messrs. Chapman & Hall.

II. *By Purchase.*

AUDEN, HAROLD ALLDEN. Sulphuric acid and its manufacture. London 1930. pp. viii + 231. ill. 16*s*. net. (*Recd.* 20/3/30.)

BURSTIN, HUGO. Untersuchungsmethoden der Erdölindustrie (Erdöl, Benzin, Paraffin, Schmieröl, Asphalt usw.) Berlin 1930 pp. xii + 300. ill. *M*. 22. (*Recd.* 11/4/30.)

DANIELS, FARRINGTON, MATHEWS, J. HOWARD, and WILLIAMS, JOHN WARREN. Experimental physical chemistry. New York 1929. pp. xvi + 475. ill. 17*s*. 6*d*. net. (*Recd.* 20/3/30.)

DIETERICH, KARL. Analyse der Harze, Balsame und Gummiharze. 2nd edition. By ERICH STOCK. Berlin 1930. pp. x + 456. ill. *M*. 44. (*Recd.* 11/4/30.)

EDER, JOSEF MARIA. Ausführliches Handbuch der Photographie. Vol. III. Part 4. Die Sensitometrie, photographische Photometrie und Spektrographie. 3rd edition. Halle (Saale) 1930. pp. xvi + 612. ill. *M*. 44.50. (*Recd.* 26/3/30.)

FRÖLICH, GUSTAV, SPÖTTEL, WALTER, and TÄNZER, ERNST. Wollkunde. Bildung und Eigenschaften der Wolle. Berlin 1929. pp. x + 419. ill. *M*. 54. (*Recd.* 26/3/30.)

PREGL, FRITZ. Die quantitative organische Mikroanalyse. 3rd edition. Berlin 1930. pp. xii + 256. ill. *M*. 20. (*Recd.* 11/4/30.)

RABINOWITSCH, EUGEN, and THILO, ERICH. Periodisches System. Geschichte und Theorie. Stuttgart 1930. pp. xii + 302. ill. *M*. 29. (*Recd.* 26/3/30.)

RICE, JAMES. Introduction to statistical mechanics for students of physics and physical chemistry. London 1930. pp. x + 333. 18*s*. net. (*Recd.* 20/3/30.)

SCHIMMEL, ALFRED. Metallographie der technischen Kupferlegierungen. Berlin 1930. pp. vi + 142. ill. *M*. 20.50. (*Recd.* 11/4/30.)

THUROW, WILLY H. English-German and German-English dictionary of chemistry. Part I. English-German. Berlin 1929. pp. viii + 261. (*Reference.*) 14*s*. net.

WELTZIEN, WILHELM, with the collaboration of KURT GÖTZE. Chemische und physikalische Technologie der Kunstseiden. Leipzig 1930. pp. xx + 521. ill. *M*. 45. (*Recd.* 13/3/30.)

WÜSTENFELD, HERMANN. Lehrbuch der Essigfabrikation. Berlin 1930. pp. xvi + 403. ill. *M*. 26. (*Recd.* 11/4/30.)

ZAPOLEON, L. B. Inedible animal fats in the United States: considered with special reference to sources of animal waste, the rendering industry, municipal reduction, and some effects of meat inspection. California 1929. pp. xvi + 353. 20*s*. net. (*Recd.* 25/2/30.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 1st, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	*Died.*
Robert William Atkinson	Mar. 7th, 1872.	Dec. 10th, 1929.
Charles Taylor Cockburn	Dec. 6th, 1906.	Feb. 6th, 1930.
David Corrie	April 17th, 1890.	Mar. 22nd, 1930.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Syed Zahoorul Hassan, Banwari Jola, Patigali, Patna City.
David James Gibbs Ives, B.Sc., A.R.C.S., 80, Wildwood Road, N.W. 11.
Frederic Samuel Kernick, Messrs. Kernick & Son, Ltd., Cardiff.
Archibald Alexander Neil, M.A., D. ès. Sc., c/o Mrs. Francis, 45, Barrington Crescent, Yarm Lane, Stockton-on-Tees.
Ernest Adam Wagstaff, B.Sc., 233, Woodborough Road, Nottingham.

Dr. H. Burton and Dr. D. C. Jones were elected Scrutators and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows.

Edmund David Patrick Barkworth, B.A.
Paul Borg.
Norah Janet Broadway, B.Sc.
Reginald Henry Coysh, M.Sc.
Negoita Dănăila.
John Henry Daniels.
Lionel Stuart Davis.
Dorothy Mary Diamond.
William Francis, F.I.C.
Louis Robert Hickson, B.Sc., A.I.C.
Ivor Lloyd.
George George Longinescu.
Samuel Marion McElvain, M.A., Ph.D.
Arthur William Middleton, B.Sc.
Wilfred Morley Morgans, B.Sc.
Margaret Mary Murray, M.Sc.
Homi Ruttonji Nanji, B.Sc.
William Dales Oldham.
Wilfred Beaumont Orr, D.Sc., Ph.D.
Donald Price, A.B., M.A., Ph.D.
Pundi Ranga Ramanujam, B.A.
William Edward Raybould, B.Sc., A.I.C.
Charles Benjamin Walter Richardson, B.Sc.
Robert Chester Roberts, M.A., Ph.D.
Vinayak Yeshwant Shewade, B.Sc.
Foster Dee Snell, B.S., A.M., Ph.D.
Walter Frederick Thorne, B.Sc.
Frederic Eric Tomkinson, B.Sc., M.A.
Allan Coley Waine, B.Sc.
Eric Walton, M.Sc., Ph.D.
Ronald Southern Walton, B.Sc.
Albert Ernest Roberts Westman, M.A., Ph.D.
Alfred Harold Whitaker.
Robert David Williams, M.Sc.
James Williamson.
Eric Ernest Thomas Young.

The following papers were read :

"Orientation effects in the diphenyl series. Part VIII. The nitration of 4 : 4′-difluorodiphenyl." By R. J. W. Le Fèvre and E. E. Turner.

"The scission of diaryl ethers and related compounds by means of piperidine. Part IV. Elimination of halogen atoms and scission reactions during substitution processes." By (Miss) D. L. Fox and E. E. Turner.

"The critical solution temperature of the system methyl alcohol–*cyclo*hexane as a means of detecting and estimating water in methyl alcohol." By D. C. Jones and S. Amstell.

"The mechanism of, and constitutional factors controlling, the hydrolysis of carboxylic esters. Part III. The calculation of molecular dimensions from hydrolytic stability maxima." By C. K. Ingold.

Extra meeting held on Thursday, May 8th, 1930, at 5.30 p.m., at the Salters' Hall, St. Swithin's Lane, E.C. 4, Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., President, in the Chair.

The President called upon Professor Dr. Niels Bohr, of Copenhagen, to deliver the fourteenth Faraday Lecture, entitled "Chemistry and the Quantum Theory." At the conclusion of the lecture, the President presented the Faraday Medal to Professor Bohr, and then asked Sir Ernest Rutherford, P.R.S., to propose a vote of thanks to the Lecturer. This was seconded by Professor F. G. Donnan, and carried with acclamation, Professor Bohr making brief acknowledgment.

The President expressed the thanks of the meeting to the Master, Wardens, and Court of the Salters' Company for the privilege of holding the lecture in the Salters' Hall.

Ordinary Scientific Meeting, Thursday, May 15th, 1930, at 8 p.m., Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	*Died.*
Edward Greenhill Amphlett	March 5th, 1885.	May 4th, 1930.
Ayerst Henham Hooker	Feb. 7th, 1878.	May 6th, 1930.

The following were formally admitted Fellows of the Chemical Society: F.M. E. Shepherd, G. R. Shutt, R. H. Coysh, F. G. Lamont.

Forms of Recommendation for Fellowship were read for the first time in favour of :—

John Goldie Breckenridge, B.Sc., Emmanuel College, Cambridge.
Robert Forsyth, M.Sc.Tech., Ph.D., 3, Epperstone Road, West Bridgford, Nottingham.
Harold Livesey, B.A., Campbell College, Belfast.
Shrinivas Gangadhar Pant, Ogalevadi, Aundh State, District Satara, Bombay Presidency.

The following forms of recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2) :—

Vasile Théodore Cerchez, D. ès. Sc., L'Ecole Polytechnique, Bucarest.
Albert Edison Miller, B.S., 229, Sinclair Place, Westfield, N.J., U.S.A.
Philip Triest Sharples, A.B., Haverford, Pennsylvania, U.S.A.
Peter Carter Speers, B.Sc., Napier Road, Lahore, India.

The following papers were read :

"Adsorption by silicic acid gel in the system *n*-butyl alcohol–benzene." By D. C. Jones and L. Outridge.

"On the dielectric strength of some explosive mixtures containing carbonic oxide." By B. W. Bradford and G. I. Finch.

"The system *cyclo*hexanol and water." By N. V. Sidgwick and L. E. Sutton.

"Studies in complex salts. Part III. The effect of alkyl substitution on the stability of the dimalonatocupriate ion." By H. L. Riley.

List of Papers, or Abstracts thereof, received between April 3rd and May 15th, 1930. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting or which have appeared in the Journal.)

"The solubility of neodymium sulphate in water and in sulphuric acid solutions at various temperatures. A new hydrate." By J. A. N. Friend.

"Investigations of the olefinic acids. Part II. Preliminary observations on the occurrence of spontaneous tautomeric change at temperatures near the boiling point." By R. P. Linstead.

"On phenylacetaldehyde." By J. R. POUND.

"A note on some properties of benzaldehyde." By J. R. POUND.

"Dehydro-2-naphthol sulphone." By L. A. WARREN and S. SMILES.

"The lower trialkyl orthophosphates. Part I." By D. P. EVANS, W. C. DAVIES, and W. J. JONES.

"The reaction between aminophenylarsinic acids and carbon disulphide." By J. G. EVERETT.

"The synthesis of *meso*-alkyl and *meso*-aryl anthracene derivatives. Part VII." By E. DE B. BARNETT and N. F. GOODWAY.

"The space-configuration of the trithioacetaldehydes." By F. D. CHATTAWAY and E. G. KELLETT.

"The physical identity of enantiomers." By A. N. CAMPBELL and F. C. GARROW.

"Determination of the reactivity of a coke to steam and carbon dioxide." By A. KEY and J. W. COBB.

"Chrysogene." By A. RUSSELL.

"Attempts to find new antimalarials. Part V. Some piperidino- and piperazino-derivatives of quinoline." By W. O. KERMACK and J. F. SMITH.

"Studies in the reactivity of aromatic hydroxyl groups. Part I." By H. L. BASSETT.

"The sulphonation of *m*-chlorophenol and some new halogenophenols." By H. H. HODGSON and A. KERSHAW.

"Colloidal platinum. Part VII. The effect of electrolytes upon the cataphoretic velocity of platinum particles and its bearing on stability." By S. W. PENNYCUICK.

"The dissociation constants of quinine, cinchonine, and cinchonidine." By E. B. R. PRIDEAUX and F. T. WINFIELD.

"A simple electrically controlled thermostat." By J. A. CRANSTON.

"The alkaloids of ergot. Part I." By S. SMITH and G. M. TIMMIS.

"The influence of a soluble fluoride on the corrosion of iron." By A. W. CHAPMAN.

"Electrical conductivity of solutions in phenol." By R. M. DOLBY and P. W. ROBERTSON.

"The properties of aminophenols. Part I. The interaction of *o*-benzylideneaminophenol and acid chlorides." By F. BELL.

"The nitration of substituted benzaldehydes and the stability of the aldehyde group." By H. H. HODGSON and E. W. SMITH.

"Pyrolysis of diazoamino-*p*-toluene." By G. T. MORGAN and L. P. WALLS.

"Heterocyclic systems containing selenium. Part III. *cyclo*-Selenopropane." By G. T. MORGAN and F. H. BURSTALL.

"The interaction of butyl chloral hydrate and phenylhydrazine:

the formation of 4-hydroxy-1-phenyl-5-methylpyrazole." By F. D. CHATTAWAY and H. IRVING.

"The vapour pressure of nickel carbonyl." By J. S. ANDERSON.

"The mechanism of cyanoacetamide and cyanoacetic ester condensations. A reply." By J. C. BARDHAN.

"Organic antimonial compounds. Part II." By W. J. C. DYKE and W. J. JONES.

"The application of a new type of triode valve to the determination of hydrogen-ion concentration with glass electrodes." By G. B. HARRISON.

"The constitution of some organic derivatives of thallium." By N. V. SIDGWICK and L. E. SUTTON.

"Complex formation amongst the nitrates. Part II. The ternary system phenol–silver nitrate–water." By C. R. BAILEY.

"The period of induction of the reaction between ammonium sulphide and formaldehyde solutions." By R. W. J. LE FÈVRE and (MISS) M. MACLEOD.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 19th, 1930.

BEALE, COLIN HENRY, 22, South Street, Dorchester, Dorset. British. Demonstrator in Chemistry, University College, Southampton. B.Sc. (Lond.), Hons. Chem. Research Student. (*Signed by*) D. R. Boyd, A. I. Vogel, H. H. Hatt.

BRAIN, FREDERICK HOWARD, 63, Maids Causeway, Cambridge. British. Research Student. B.A. Cambridge; B.Sc. London. Class I in Parts I and II, Natural Sciences Tripos. Engaged in research in organic chemistry in University Chemical Laboratory, Cambridge. (*Signed by*) W. J. Pope, W. H. Mills, P. Maitland.

BRECKENRIDGE, JOHN GOLDIE, Emmanuel College, Cambridge. British. Research Student. B.Sc., University of Toronto, Canada. Third year research student in organic chemistry in University Chemical Laboratory, Cambridge. (*Signed by*) Peter Maitland, F. G. Mann, R. E. D. Clark.

CLAR, ERICH, Via G. Colombo 81, Milan, Italy. Austrian Czecho-slovakian citizen. Chief Chemist of Institute of Organic Chemistry, "Istituto di Perfezionamento in Chimica Industriale Giuliana Ronzoni." Dr.-Ing., Dipl.-Ing. (Dresden). Formerly assistant to Professor R. Scholl at the Institut für Organischen Chemie der Technische Hochschule, Dresden, Germany. Publications: *Berichte*, 1929, **62**, 350, 940, 950, 1574, 3021; 1930, **63**, 112, 512. (*Signed by*) G. T. Morgan, J. W. Cook, E. de Barry Barnett.

FORSYTH, ROBERT, 3, Epperstone Road, West Bridgford, Nottingham.

British. Research Chemist. M.Sc. (Tech.), Manchester; Ph.D. (Vict.), Manchester. University Demonstrator in Applied Chemistry, College of Technology, Manchester, 1923–24. Research Assistant to Professor of Applied Chemistry, University of Manchester, 1925–27. Research Chemist, Messrs. Boots' Pure Drug Co., Ltd., 1927 to present time. *J.C.S.*, 1924, **125**, 919; 1925, **127**, 1659; 1926, 800, 2502, 2912; 1930, 397. (*Signed by*) Frank Lee Pyman, Reginald Child, Reginald C. Fawcett.

HASSAN, SYED ZAHOORUL, Banwari Jola, Patigali, Patna City, B. & O., India. Indian. At present a volunteer at I.G. Farbenindustrie Aktiengesellschaft, Germany. (Government of India's Scholar.) Student at the Government Dyeing and Printing Institute, Cawnpore, India. University of Patna, University of Calcutta. Student at the College of Technology, Manchester, as Government of India's Scholar. Volunteer at British Alizarin Co., Ltd., Manchester, and I.G. Farbenindustrie A.-G., Germany. (*Signed by*) Fredk. A. Mason, John K. Wood, Arthur M. Morley.

IVES, DAVID JAMES GIBBS, 80, Wildwood Road, Golders Green, N.W. 11. British. Research Student. B.Sc. (Lond.); A.R.C.S. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, H. L. Riley.

KERNICK, FREDERIC SAMUEL, Trencrom Heoldon, Whitchurch (Glam.). British. Manufacturing Chemist. Twelve years' General Analytical and Manufacturing experience, England and France. Ten years Director, Messrs. Kernick & Son, Ltd., Manufacturing Chemists and Chemical Apparatus Manufacturers, Cardiff, and as Designer of that firm's special apparatus used in Universities at home and abroad; it is necessary to keep in touch with latest chemical thought. (*Signed by*) J. H. Duncan, D. Owen Davies, Ernest A. Rudge.

KILBY, JOSEPH NEEDHAM, "Wildfell," Morthen Thurcroft, nr. Rotherham. British. Chief Metallurgist and Works Manager. Papers before: Iron and Steel Inst., 1917, 1918 (2 papers); Sheffield Engineers and Metallurgists (Univ.), 1917, 1929 (2 papers); Sheffield Trades Technical Societies (Univ.), 1928, 1929, 1930 (12 papers); Sheffield Metallurgical Assoc. (Works), 1921, 1922, 1928, 1929 (5 papers); A.M.I.Mech.E. All above papers on steel manufacture, defects in, chemistry of, except four, which were on gas producer practice. (*Signed by*) W. H. Hatfield, E. H. Saniter, Cecil H. Desch.

LIVESEY, HAROLD, Campbell College, Belfast. British. Senior Chemistry Master. B.A., Cantab. Three years' experience teaching Chemistry of University Scholarship standard. (*Signed by*) W. G. Palmer, A. J. Berry, Harold A. Scarborough.

MIKI, KOZO, University College, Chemical Department, Gower Street, W.C.1. Japanese. Chemical Engineer. Doctor, Tokio Imperial University, Japan. (*Signed by*) Robert Robinson, K. N. Menon, S. Sugasawa.

NEIL, ARCHIBALD ALEXANDER, c/o Mrs. Francis, 45, Barrington Crescent, Yarm Lane, Stockton-on-Tees, Co. Durham. British. Librarian (Synthetic Ammonia and Nitrates, Ltd., Billingham, Stockton-on-Tees). M.A., Oxford (College, Merton), 1898; Diploma in Technical Chemistry, Polytechnicum, Zürich, 1901; D.-ès-Sciences, Geneva, 1906. Science Master (two and a half years). One and a half years Chemist in Bleaching and Dye Works. Three years Gas Works Chemist. Seven years Chemical Journalism (Brunner Mond & Co., Ltd.). Since July 1920 Librarian at Synthetic Ammonia and Nitrates, Ltd. Thesis (Geneva, 1906): "Recherche dans la série des azoxines." "On Dinaphthalene Dioxide" (*J.C.S.*, 1906, A., i, 356, from *Ber.*, 1906, **39**, 1059–60). Synthesis in "Oxazine Group" (with F. Kehr-

mann), *J.C.S.*, 1915, **A.**, *i*, 303 (*Ber.*, 1914, **47**, 3102–9). (*Signed by*) M. P. Applebey, G. I. Higson, W. Idris Jones.

PANT, SHRINIVAS GANGADHAR, Ogalevadi, Aundh State, Dist. Satara, Bombay Presidency, India. Indian (Hindoo Brahman). Managing Proprietor of the Aundh Soap Works, Ogalevadi. Licentiate of Chemical Technology (L.T.C.) from Victoria Jubilee Technical Institute, Bombay, with oils and soaps as special subjects. Theoretical and practical experience in the Mysore Government Soap Factory, Bangalore, and Madras Government Kerala Soap Institute, Calicut. I wish to take advantage of the modern scientific progress by reading the Chemical Society's journal and other publications. (*Signed by*) A. K. Menon, S. G. Sastry, D. K. Rao.

RADCLIFFE, CEDRIC BURTON, 46, Carlton Gore Road, Auckland, New Zealand. British. Research Chemist. M.Sc. (New Zealand). Student of Chemistry, engaged in research work for the last three years. Publications: "The Essential Oil of *Phebalium nudum*," by C. B. Radcliffe and W. F. Short, *J.S.C.I.*, 1928, **47**, 324T. "The Essential Oil of *Melicope ternata* (Wharangi)," by C. B. Radcliffe, *Trans. N.Z. Institute*, 1929, **60**, 251. (*Signed by*) F. P. Worley, W. Frank Short, A. H. Bowell.

WAGSTAFF, ERNEST ADAM, 233, Woodborough Road, Nottingham. British. Student. B.Sc. (London, External). Research Student, University College, Nottingham. (*Signed by*) F. S. Kipping, E. B. R. Prideaux, H. H. Barber.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2):

CERCHEZ, VASILE THÉODORE, Bucarest (Roumania), Laboratoire de Chimie Organique de l'École Polytechnique, Rue Polizu. Roumanian. Assistant au Lab. de Chimie Organique de l'Ecole Poly. Docteur-ès-Sciences Physique (Diplôme d'Etat Français), Université de Lyon. Diplôme de l'Ecole Nationale Sup. du Petrole de Strasbourg. Travaux scientifiques publiés: "Recherches sur la chloruration dans la série du butane," *Bull. Soc. Chim. de France*, 1925, T. **37**, 1131. "Contribution à la connaissance du raffinage chimique des huiles minérales," *Bull. Soc. Chim.*, 1927, T. **41**, 771. "Sur l'emploi des alcoolates de Mg dans la prep. des ethers-oxydes," *Bull. Soc. Chim.*, 1928, T. **43**, 762. "Recherches sur l'éther aminomalonique," Thèses, Lyon, 1929. (*Signed by*) C. S. Gibson.

GANDHI, RATILAL MANEKLAL, Bansda (Bombay Presidency), India. Hindu. Assistant Director, Commerce and Industries, Bansda State, Bansda. Practical Manufacturing Chemist, expert in making soap, oil paints, distemper, sanitary water paints, varnishes, and several pharmaceutical preparations, etc. (*Signed by*) Kantilal M. Sheth.

MILLER, ALBERT EDISON, 229, Sinclair Place, Westfield, New Jersey. U.S.A. American. Petroleum Chemist. B.S., Chemistry, The Pennsylvania State College, U.S.A. Investigator of processes and inventions for Sinclair Refining Co., of 45, Nassau Street, New York City, for twelve years. Inventor of U.S. Patents 1,311,987, 1,714,097, and 1,646,760. Author of numerous technical articles in American and German periodicals. (*Signed by*) J. G. Detwiler, K. G. Mackenzie.

SHARPLES, PHILIP TRIEST, Haverford, Pennsylvania, U.S.A. (Business address: 23rd and Westmoreland Streets, Philadelphia, Pennsylvania, U.S.A.). American. Centrifugal Engineer. President, Sharples Specialty

Co., Sharples Solvents Corporation. A.B., Swarthmore College, Swarthmore, Pennsylvania. Developed process for commercial production of amyl alcohols from pentane. Developed super-centrifuge. (*Signed by*) Gellert Alleman, Walter A. Patrick.

Speers, Peter Carter, Napier Road, Lahore. American. Professor of Technical Chemistry, University of the Punjab, and Head of the Department of Chemistry, Forman Christian College, Lahore. B.Sc. (Princeton). (*Signed by*) N. A. Yajnik, S. S. Bhatnagar.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

Chemical Engineering and Chemical Catalogue. 6th edition. Edited by Dudley Maurice Newitt. London 1930. pp. 394 + lvi. ill. (*Reference.*) 15*s.* net.

From the Publishers: Messrs. Leonard Hill.

Ling, Edgar Roberts. A text-book of dairy chemistry, theoretical and practical, for students of agriculture and dairying. London 1930. pp. viii + 213. ill. 6*s.* net. (*Recd.* 8/5/30.)

From the Publishers: Messrs. Chapman & Hall.

Nasini, Raffaello. I soffioni e i lagoni della Toscana e la industria boracifera. Storia, studi, ricerche chimiche e chimico-fisiche eseguite principalmente nell'ultimo venticinquennio. Roma 1930. pp. xii + 658. ill. (*Recd.* 15/5/30.)

From Prince Ginori Conti and the Author.

Oddo, Giuseppe. Trattato di chimica organica. Palermo 1930. pp. xvi + 949. ill. *L.* 90. (*Recd.* 28/4/30.)

From the Publisher: Signor Remo Sandron.

Rideal, Eric Keightley. An introduction to surface chemistry. [2nd edition.] Cambridge 1930. pp. xii + 459. 21*s.* net. (*Recd.* 3/5/30.) From the Syndics of the Cambridge University Press.

Trillat, Jean Jacques. Les applications des rayons X. Physique-chimie-métallurgie. (Recueil des Conférences-Rapports de Documentation sur la Physique.) Paris 1930. pp. iv + 298. ill. 85 *fr.* (*Recd.* 13/5/30.)

From the Publishers: Les Presses Universitaires de France.

II. *By Purchase.*

Blum, William, and Hogaboom, George B. Principles of electroplating and electroforming (electrotyping). 2nd edition. New York 1930. pp. xvi + 424. ill. 22*s.* net. (*Recd.* 15/5/30.)

Corse, W. M. Bearing metals and bearings. (American Chemical Society Monograph Series.) New York 1930. pp. 383. ill. 29*s.* 6*d.* net. (*Recd.* 15/5/30.)

FREEMAN, BENJAMIN, and HOPPE, FREDERICK G. Electroplating with chromium, copper, and nickel. New York 1930. pp. x + 212. ill. 21*s*. net. (*Recd.* 15/5/30.)

FRIEND, JOHN NEWTON. A text-book of inorganic chemistry. Vol. XI. Organometallic compounds. Part ii. Derivatives of arsenic. By ARCHIBALD EDWIN GODDARD. London 1930. pp. xxviii + 605. (Two copies.) 42*s*. net.

MACLEOD, JOHN JAMES RICKARD, [and others]. Physiology and biochemistry in modern medicine. 6th edition. [St. Louis] 1930. pp. xxxii + 1074. ill. 42*s*. net. (*Recd.* 15/5/30.)

MICHAELIS, LEONOR. Oxidation-reduction potentials. Translated from the German manuscript by LOUIS B. FLEXNER. Philadelphia 1930. pp. xiv + 199. ill. 12*s*. 6*d*. net. (*Recd.* 8/5/30.)

SCHAEFER, CLEMENS, and MATOSSI, FRANK. Der Ramaneffekt. (Fortschritte der Chemie, Physik und physikalischen Chemie. Vol. XX.) Berlin 1930. pp. iv + 52. ill. (Reference.)

STUMPER, R. Die physikalische Chemie der Kesselsteinbildung und ihrer Verhütung. (Sammlung. New Series. Vol. I.) Stuttgart 1930. pp. 51. ill. (*Reference.*)

THEWS, EDMUND RICHARD. Metallurgy of white metal scrap and residues. New York 1930. pp. xiv + 383. ill. 24*s*. net. (*Recd.* 28/4/30.)

UNITED STATES STEEL CORPORATION. Methods . . . for the sampling and analysis of coal, coke and by-products. 3rd edition. Pittsburgh [1929]. pp. xiv + 334. ill. 13*s*. 6*d*. net. (*Recd.* 8/5/30.)

WILLIAMS, JOHN WARREN. Molekulare Dipolmomente und ihre Bedeutung für die chemische Forschung. (Fortschritte der Chemie, Physik und physikalischen Chemie. Vol. XX.) Berlin 1930. pp. iv + 66. ill. (*Reference.*)

III. *Pamphlets.*

AERONAUTICAL RESEARCH COMMITTEE. Reports and Memoranda. No. 1244. The influence of oxygen on corrosion fatigue. By A. M. BINNIE. London 1929. pp. 3. ill.

—— —— No. 1253. Report on some properties of alloys of aluminium with thorium and silicon. By J. D. GROGAN and T. H. SCHOFIELD. London 1929. pp. 12. ill.

—— —— No. 1266. Experiments on flame extinction in gaseous mixtures. By W. HELMORE. London 1930. pp. 17. ill.

ALPHEN, JAN VAN. Inwerking van keteenen op hydrazinederivaten. Leiden 1924. pp. xii + 96.

[AUSTRALIA, COMMONWEALTH OF.] *Department of Defence.*

Munitions Supply Board. Knocking in internal combustion engines and the use of anti-knock fuels. By ALFRED ERNEST DAWKINS. Melbourne 1929. pp. 35. ill.

BAUDET, HENRI PHILIPPE. Vervangbaarheid van het halogeenatoom in 1-chloor- en 1-broom-2-cyaan-4-nitrobenzol. Leiden 1922. pp. 75.

BRITISH CAST IRON RESEARCH ASSOCIATION. Research Report No. 72. Recommended methods for sampling and analysis of foundry materials. Birmingham 1929. pp. 16.

BRUINING, WIEBRANDUS JAN. Ketazine-, phenylhydrazon- en semicarbazonvorming van in de kern gesubstitueerde acetophenonen. Leiden 1922. pp. x + 69.

BUNT, CORNELIS VAN DE. Trichloor- en tetrabroom-nitro-benzaldehyden hexachloor- en octabroom-indigo. Leiden 1927. pp. xii + 87.

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—— Special Report Series, No. 119. A study of some organic arsenical compounds with a view to their use in certain streptococcal infections. By LEONARD COLEBROOK. London 1928. pp. 41. ill.

—— Special Report Series, No. 141. The tannic acid treatment of burns. London 1929. By WILLIAM COMBE WILSON. pp. 34. ill.

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MINISTRY OF HEALTH. The purification of the water of swimming baths. London [1929]. pp. 52.

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MITTER, PRAFULLA CHANDRA. Some aspects of biochemical synthesis. Presidential address (chemistry section) 17th Indian Science Congress. Allahabad 1930. pp. 19.

MULLIN, CHARLES EARL. Influence du p_H dans les phénomènes de teinture. Paris 1929. pp. 84.

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—— Salt licks. (From the *Trans. F.E.A.T.M. 7th Congress*, 1927, **3**.) Calcutta 1929.

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 5th, 1930, at 8 p.m., Professor H. Brereton Baker, C.B.E., D.Sc., F.R.S., in the Chair.

The Chairman referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	Died.
Charles John Baker	Dec. 6th, 1883.	May 15th.
Robert Barton	Jan. 18th, 1872.	May 26th.

The Chairman announced that a communication had been received from the Committee of the Van 't Hoff Fund for the endowment of research in pure and applied chemistry. The amount from this fund available for distribution during 1931 is about 1200 Dutch guilders.

A Committee consisting of Professor A. F. Holleman (President), Professor F. M. Jaeger, Professor A. Smits and Professor J. P. Wibaut (Secretary) has been appointed to award grants. Applications should be sent before November 1st, 1930, by registered post to : " Het Bestuur der Koninklijke Akademie van Wetenschappen, bestemd voor de Commissie van het van 't Hoff-funds," Trippenhuis, Klovenierburgwal, Amsterdam. Every applicant is requested to submit a detailed account of the manner in which he proposes to expend the grant and to state the reasons for which he makes his application. Papers embodying the results of the research may be published in any journal, but acknowledgment must be made of the source of the grant. Copies of papers containing the results of the research must be forwarded to the Committee.

Forms of Recommendation for Fellowship were read for the first time in favour of :—

Alfred William Baldwin, Ph.D., 100, Cecile Park, Crouch End, N. 8.
William Andrew Beattie, 11, Fraser Grove, Wardie, Edinburgh.
Thomas Lane Harris, B.Sc., 5, Hawthorne Road, King's Norton, Birmingham.
Douglas William Hill, Ph.D., 33, Dunlop Avenue, Lenton, Nottingham.
Thomas John Vernon Parry, 349, Buxton Road, Great Moor, Stockport.
Christine Mary Pilkington, B.A., B.Sc., Somerville College, Oxford.

The following papers were read :—

"The influence of a soluble fluoride on the corrosion of iron." By A. W. CHAPMAN.

"The application of a new type of triode valve to the determination of hydrogen-ion concentration with glass electrodes." By G. B. HARRISON.

"Properties of conjugated compounds. Part X. Variability in the mode of ester-addition to butadiene esters and ketones." By E. H. FARMER and T. N. MEHTA.

Ordinary Scientific Meeting, Thursday, June 19th, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT made the following announcements :

1. In connection with the formation of a Central Building Trust for Scientific and Technical Societies and Institutions, the Council had that afternoon authorised him to sign the Memorandum and Articles of Association on behalf of the Society, which, it was hoped, will become one of the Constituent Organisations of the Trust.

2. The attention of Fellows is drawn to a general discussion on Colloid Science Applied to Biology which has been arranged by the Colloid Committee of the Faraday Society. The meeting will be held in the Laboratory of Physical Chemistry, Free School Lane, Cambridge, from September 29th to October 1st, 1930.

3. The first meeting of the new Session, 1930–31, will be held on Thursday, October 16th, 1930, when a memorial plaque of the late Professor W. H. Perkin will be unveiled, and that Professor W. N. Haworth will deliver an oration on his life and work. This will be the only business of the meeting.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Monmohan Chandra, B.Sc., Government High School, Ma-ubin, Burma.
Rudolph Maximilian Goepp, Junior, B.S., Queen's College, Oxford.
Frederick William Hampshire, Overstrand Lodge, Overstrand, Norfolk.

The following form of recommendation for Fellowship has been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Joseph Spencer Fawcett, 186, Oxford Terrace, Christchurch, New Zealand.

The following were formally admitted Fellows of the Chemical Society: E. D. P. Barkworth and N. J. Broadway.

Messrs. F. M. Brewer and G. H. Locket were elected Scrutators and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Colin Henry Beale, B.Sc.
Frederick Howard Brain, B.A., B.Sc.
John Goldie Breckenridge, B.Sc.
Vasile Théodore Cerchez, D.-ès-Sc.
Erich Clar, Dr.-Ing., Dipl. Ing.
Robert Forsyth, M.Sc., Ph.D.
Ratilal Maneklal Gandhi.
Syed Zahoorul Hassan.
David James Gibbs Ives, B.Sc., A.R.C.S.
Frederic Samuel Kernick.
Joseph Needham Kilby, A.M.I.Mech.E.
Harold Livesey, B.A.
Kozo Miki.
Albert Edison Miller, B.S.
Archibald Alexander Neil, D.-ès.-Sc.
Shrinivas Gangadhar Pant.
Cedric Burton Radcliffe, M.Sc.
Philip Triest Sharples, A.B.
Peter Carter Speers, B.Sc.
Ernest Adam Wagstaff, B.Sc.

The following papers were read:

"The constitution of some organic derivatives of thallium." By N. V. Sidgwick and L. E. Sutton.

"Structure of *iso*nitriles and compounds of bivalent carbon." By D. L. Hammick, R. G. A. New, N. V. Sidgwick, and L. E. Sutton.

"The constitution of complex metallic salts." By F. G. Mann.

"The optical resolution of 2 : 4-dinitro-2′-methyldiphenyl-6-carboxylic acid." By (Miss) M. S. Lesslie and E. E. Turner.

"The scission of diaryl ethers and related compounds by means of piperidine. Part V. The nitration of methyl-, dimethyl-, and polyhalogeno-derivatives of diphenyl ether." By (Miss) D. L. Fox and E. E. Turner.

The Council has made the following Grants from the Research Fund:

	£	*s.*	*d.*
Isomeric change of aromatic compounds (*contd.*). A. W. Chapman. (Sheffield Univ.)	10	0	0
Constitution of santonin, and related problems. G. R. Clemo. (Armstrong Coll.)	10	0	0
The chemistry of aconitic acid. R. D. Desai. (Imperial Coll.)...	10	0	0
Synthetical studies of "Jaborandi" alkaloids. A. N. Dey. (Imperial Coll.)	12	0	0
Studies in glucosides. F. S. H. Head. (E. Lond. Coll.)... ...	10	0	0
Synthesis of compounds allied to the cinchona alkaloids. Miss R. V. Henley. (Bedford Coll.)	10	0	0
Nuclear alkylation of aromatic bases. D. H. Hey. (Manchester Univ.)	8	0	0
Syntheses of glucosides and hydroxycarbinols. E. T. Jones. (E. Lond. Coll.)	10	0	0

	£	s.	d.
Effect of *cis-* and *trans-*hexahydrohydrindene nucleus on the carbon tetrahedral angle. A. Kandiah. (Imperial Coll.) ...	10	0	0
Hydroxy-carbonyl compounds. F. E. King. (E. Lond. Coll.)	12	0	0
Three-carbon tautomerism. E. Leton. (Imperial Coll.) ...	10	0	0
Addition of esters to substituted butadiene esters and ketones. T. N. Mehta. (Imperial Coll.)	10	0	0
Velocity of reaction and reactivity of the alkyl iodides and guaiacol. J. A. Mitchell. (Chelsea Poly.)	5	0	0
The glutaconic problem. H. R. Nanji. (Imperial Coll.) ...	10	0	0
Substituted diaryl ethers. J. Reilly. (Univ. Coll., Cork) ...	10	0	0
Certain lichenin derivatives related to cellulose compounds. J. Reilly. (Univ. Coll., Cork)	7	0	0
Diacetamide and triacetamide as polysaccharide solvents. J. Reilly. (Univ. Coll., Cork)	6	0	0
Study of certain mannan derivatives. J. Reilly. (Univ. Coll., Cork)	5	0	0
Tautomeric changes in unsaturated hydrocarbons. Miss R. Schalit. (Imperial Coll.)	10	0	0
Chemistry and stereoisomerism of diaryl ethers. Miss F. R. Shaw. (Bedford Coll.)	10	0	0
A comparative study of the "wetting" of glasses by metals. F. H. Trim. (Sir John Cass Tech. Inst.)	15	0	0
Syntheses of cyclic compounds (*contd.*). A. I. Vogel. (Univ. Coll., Southampton)	15	0	0
Nitration of stilbazoles and β-phenyl ethyl-pyridines. E. A. Wagstaff. (Univ. Coll., Nottingham)	5	0	0
Studies of acids and bases in non-aqueous solvents. W. F. K. Wynne-Jones. (Reading Univ.)	15	0	0
	£235	0	0

THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 4th, until Saturday, August 16th (inclusive). During the following four weeks (August 18th to September 13th), the Library will close daily at 5 p.m.

List of Papers, or Abstracts thereof, received between May 15th and June 19th, 1930. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The action of aqueous hydrofluoric acid on silica." By W. G. PALMER.

"Application of thallium compounds in organic chemistry. Part V. Thallous ethoxide." By R. C. MENZIES.

"The constitution of phenolphthalein. Part II. The fading of phenolphthalein in alkaline solution." By H. LUND.

"The asymmetric photochemical decomposition of humulene nitrosite by circularly polarised light." By S. MITCHELL.

"Investigations on the reactivity of halogens in various types of naphthalene derivatives. Part II." By J. B. SHOESMITH and A. MACKIE.

"The solubilities of silver chloride, silver bromide, and silver iodide and the normal potentials of chlorine, bromine, and iodine in methyl alcohol and ethyl alcohol." By F. K. V. KOCH.

"The structure of the tungstic acids. Part I. The ageing of tungstic acids." By A. M. MORLEY.

"The structure of the tungstic acids. Part II. The *X*-ray examination of tungstic acids." By A. M. MORLEY and A. J. BRADLEY.

"The reaction of bromine with aliphatic acids. Part IV. Succinic acid." By E. D. HUGHES and H. B. WATSON.

"The action of freshly precipitated mercuric oxide on a suspension of 3 : 5-dinitrotoluene in aqueous sodium hydroxide." By H. H. HODGSON and E. W. SMITH.

"The influence of the 2 : 6-dihalogeno-substituents on the reaction between fuming nitric acid and the 4-fluoro-2 : 6-dihalogenophenols and -anisoles. Note on the theory of methylation." By H. H. HODGSON and J. NIXON.

"The solubility of the octahydrates of the rare-earth sulphates." By K. S. JACKSON and G. RIENÄCKER.

"Studies in the naphthalene series. Part I. The methylation of α-naphthylamine." By B. GOKHLÉ and F. A. MASON.

"The orienting influence of free and bound ionic charges on attached simple or conjugated unsaturated systems. Part V. Nitration of benzyldiethylsulphonium picrate." By A. POLLARD and R. ROBINSON.

"The mechanism of thermal decomposition of the normal olefins." By R. V. WHEELER and W. L. WOOD.

"Natural glucosides. Part II. The constitution of æsculin." By F. S. H. HEAD and A. ROBERTSON.

"The electrical conductivity of butyric acid–water mixtures." By J. GRINDLEY and C. R. BURY.

"β-Naphtha-1-thioquinone and dehydro-2-naphthol 1-disulphide." By H. A. STEVENSON and S. SMILES.

"The catalytic action of hydrogen on the carbon monoxide flame." By W. E. GARNER and D. A. HALL.

"The syntheses of glucosides. Part V. Two new syntheses of rubiadin, and syntheses of *l*-*O*-methylrubiadin and of rubiadin glucoside." By E. T. JONES and A. ROBERTSON.

"The optical instability of tercovalent carbonium kations. The transformation of *d*-phenylmethylcarbinyl *dl*-*p*-toluenesulphinate into optically inactive α-phenylethyl-*p*-tolylsulphone." By J. KENYON and H. PHILLIPS.

"Studies on hydrogen cyanide. Part II. The compounds formed by the action of the hydrogen halides on hydrogen cyanide." By L. E. HINKEL and R. T. DUNN.

"Triazole compounds. Part III. The alkylation of nitro-1 : 2 : 3-benztriazoles." By O. L. BRADY and C. V. REYNOLDS.

"Strychnine and brucine. Part XI. Note on dihydrobrucine and some derivatives." By O. ACHMATOWICZ, R. C. FAWCETT, (the late) W. H. PERKIN, jun., and R. ROBINSON.

"The solubility of the magnesium mandelates." By A. FINDLAY and A. N. CAMPBELL.

"The purification of some sensitive ketones." By G. A. R. KON.

"Studies in aromatic substitution. Part III. The action of fuming nitric acid on the 3-fluoro-2 : 4 : 6-trihalogeno-phenols and -anisoles." By H. H. HODGSON and J. NIXON.

"Compounds of arsenious chloride and pyridine." By C. S. GIBSON, J. D. A. JOHNSON, and (the late) D. C. VINING.

"A phase-rule study of the cobalt chloride colour change." By H. BASSETT and (in part) H. H. CROUCHER.

"Passivity of metals. Part VI. A comparison between the penetrating powers of anions." By S. C. BRITTON and U. R. EVANS.

"3-Acetamido-4-hydroxyphenylstibinic acid." By I. E. BALABAN.

"The photochemical reaction between oxygen and hydrogen chloride." By A. J. ALLMAND and R. G. FRANKLIN.

"On the spatial configuration of the single valencies of allene." By C. K. INGOLD and C. W. SHOPPEE.

"Optical activity and the polarity of substituent groups. Part XIV. Influence of substituent poles and dipoles on the rotatory power of *l*-menthyl acetate." By H. G. RULE, R. H. THOMPSON, and (in part) A. ROBERTSON.

"Optical activity and the polarity of substituent groups. Part XV. Phenyl-substituted esters and ethers of *l*-menthol and β-octanol." By H. G. RULE and J. BAIN.

"Direct meta-substitution in the toluene nucleus." By J. B. SHOESMITH and J. F. MCGECHAN.

"Heats of adsorption and isotherms in the system platinum–hydrogen." By E. B. MAXTED.

"The structures of the octahydrocarbazoles." By S. G. P. PLANT.

"Solubility of magnesium neodymium nitrate in water, nitric acid, and magnesium nitrate solutions." By J. A. N. FRIEND.

"Stereoisomerism of disulphoxides and related substances. Part VI. Co-ordination compounds of some disulphides and diamines." By G. M. BENENTT, A. N. MOSSES, and F. S. STRATHAM.

"Tetrabromodimethylquinoxaline." By G. M. BENNETT and G. H. WILLIS.

"The Walden inversion. Part III." By H. N. K. RÖRDAM.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BRIGGS, DENNIS BROOK. The study of crystals. London 1930. pp. 137. ill. 4*s*. net. (*Recd.* 13/5/30.) From the Author.

CONSTABLE, FREDERICK HURN. A condensed outline of modern physical chemistry. London 1930. pp. 157. 10*s*. 6*d*. net. (*Recd.* 12/6/30.) From the Publishers: Messrs. Ernest Benn.

HOLMYARD, ERIC JOHN. An introduction to organic chemistry. London 1930. pp. xii + 282. ill. 4*s*. 6*d*. net. (*Recd.* 19/5/30.) From the Publishers: Messrs. Edward Arnold & Co.

JAPAN. *National Research Council.* Report. No. 1, 1922, etc. Tokyo 1930 +. (*Reference.*) From the Director.

MENDELÉEFF CONGRESS ON PURE AND APPLIED CHEMISTRY. V, 1928. Papers, etc. 3 vols. Kasan 1928. pp. 150, 32, 32. ill. (*Reference.*) [In Russian.] From the Secretary.

[MERCK, E.] Merck's index. 6th edition. Darmstadt 1929. pp. 644 + 14. (*Reference.*) From the Publisher: Herr E. Merck.

NATIONAL BENZOLE ASSOCIATION and UNIVERSITY OF LEEDS. *Joint Benzole Research Committee.* Seventh report. London 1930. pp. vi + 149. ill. (*Reference.*) From the National Benzole Association.

REALE ACCADEMIA D'ITALIA. Annuario. Vol. I, 1929, etc. Roma 1930 +. (*Reference.*) From the Academy.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part v. Berlin 1930. pp. 981 to 1172. ill. *M*. 10. (*Recd.* 19/5/30.) From the Publishers: Herren Urban & Schwarzenberg.

TRICKS OF TRADE in the adulterations of food and physic; with directions for their detection and counteraction. London 1856. pp. xvi + 191. From Dr. John McCrae.

II. *By Purchase.*

BALCKE, HANS. Die neuzeitliche Speisewasser-Aufbereitung. Leipzig 1930. pp. viii + 138. ill. *M*. 16. (*Recd.* 2/6/30.)

HANDBUCH DER KAUTSCHUKWISSENSCHAFT. Edited by KARL MEMMLER. Leipzig 1930. pp. xxiv + 766. ill. *M.* 60. (*Recd.* 12/6/30.)

HANDBUCH DER KOLLOIDWISSENSCHAFT IN EINZELDARSTELLUNGEN. Edited by WOLFGANG OSTWALD. Vol. IV. Die Globuline. By MONA SPIEGEL-ADOLF. Dresden 1930. pp. xvi + 452. ill. *M.* 35. (*Recd.* 12/6/30.)

HEERMANN, PAUL. [Editor.] Enzyklopädie der textilchemischen Technologie. Berlin 1930. pp. x + 970. ill. (*Reference.*) *M.* 78.

LIPPMANN, EDMUND OSKAR VON. Die Geschichte des Wismuts zwischen 1400 und 1800. Berlin 1930. pp. 42. *M.* 2.80. (*Recd.* 12/6/30.)

SIMMERSBACH, OSKAR. Grundlagen der Koks-Chemie. 3rd edition. By GUSTAV SCHNEIDER. Berlin 1930. pp. vi + 366. ill. *M.* 29. (*Recd.* 12/6/30.)

THIERFELDER, HANS, and KLENK, ERNST. Die Chemie der Cerebroside und Phosphatide. Berlin 1930. pp. viii + 224. *M.* 21.20. (*Recd.* 12/6/30.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 17. The mineral content of pastures. Melbourne 1930. pp. 29. ill.

CHIKASHIGE, MASUMI, and UENO, SHÛZÔ. A new coinage metal: forgery detectable without analysis. (World Eng. Congress, Tokyo 1929). pp. 2. ill.

[INDIAN LAC ASSOCIATION FOR RESEARCH.] A short account of the work of the Indian Lac Research Institute. Ranchi 1930. pp. 23.

KOSAKA, HIROSI. Die Beziehungen zwischen den verschiedenen physiologischen Erscheinungen der Pflanzen und den an verschiedenen Vegetationsorganen in Erscheinung tretenden Farbstoffen. I. Ueber die Beziehungen zwischen der Anthozyanbildung und dem Wachstum von *Abutilon avicennae.* (From the *J. Dept. Agric. Kyushu Imp. Univ.*, 1929, 2.)

MIHOLIĆ, STANKO STANKOV. Kemijska analiza alkaličnih kiselica u Donjoj Kostrivnici. Beograd 1930. pp. 16.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 59. The effect of the rate of cooling on the structure and constitution of steel. By J. M. ROBERTSON. London 1930. pp. 57. ill.

MORRISON, FRANK RICHARD. Ambergris and how to recognise it. (*Sydney Technological Museum Bulletin*, No. 15.)

NEWCOMB, CLIVE, and SANKARAN, GANAPATI. A note on iodine metabolism. (From the *Trans. F.E.A.T.M. 7th Congress*, 1927, **3**.) Calcutta 1929.

NIJK, DIRK ROELOF. Een vergelijkend onderzoek van kerngesubstitueerde phenylphosphine- en phenylarsinezuren. Leiden 1922. pp. x + 73. ill.

OBINATA, ICHIJI. On the nature of eutectoid-transformation in relation to the mechanism of quenching and tempering of aluminium-bronze. (From the *Mem. Ryojun Coll. Eng.*, 1929, **2**.) ill.

OPTICAL SOCIETY OF AMERICA. The Review of Scientific Instruments. New Series, Vol. I, etc. Menasha, Wisconsin 1930 +. (*Reference.*)

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Special Meeting, Thursday, October 16th, 1930, at 8 p.m., PROFESSOR J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT stated that the meeting was held for the purpose of unveiling and receiving a Plaque presented by subscribers to the Perkin Memorial Fund and for the delivery of an Oration on the Life and Work of the late Professor W. H. Perkin.

PROFESSOR ROBERT ROBINSON, who was asked by the President to make a statement, said :

"Since I shall have an opportunity on October 25th in the parallel ceremony at Oxford to make my personal tribute to the memory of the late Professor Perkin, my remarks on this occasion may be limited to a formal explanation.

"As Perkin's seventieth birthday approached, a number of his collaborators, academic and scientific, and students formed the idea of presenting him with his portrait as a mark of the esteem and affection in which they held him. The project was organised by a small Committee, and the response of the subscribers was enthusiastic.

"The execution of the scheme was necessarily postponed by the illness of the subject, and in September 1929 we were shocked and grieved by the news of Professor Perkin's death.

"It was decided to transform the proposed compliment into a Memorial, but, acting on technical advice, the idea of a portrait was abandoned, and instead it was decided to have a Bronze Plaque.

"We were fortunate in being able to secure the services of Mr. Ernest Gillick, whose distinguished work is well known to the Fellows of this Society through the Harrison Memorial which adorns our walls.

"You will all agree that the difficulties of posthumous portraiture have been overcome by Mr. Gillick in the present instance, and that he has provided us with a most acceptable likeness of Perkin as we knew him.

"A great advantage of the Plaque over the portrait was that it could be produced in triplicate, and in fact three identical plaques have been made. One is already in Manchester University, the third will be unveiled in the Dyson Perrins laboratory, and the second is appropriately to be presented to-night to the Chemical Society, which has had the honour of publishing almost the whole of Perkin's original work.

"Before this audience it is unnecessary to dilate on the volume and great scientific interest of Perkin's output, but some of the dates of his other connexions with the Society may be recalled.

"He became a Fellow in 1887, and served on the Council and as Vice-President for several terms. He received the Longstaff Medal in 1900, and was President from 1913 to 1915. Almost his last labour in the cause of the science he loved so well was the delivery of the first Pedler Lecture, and he then showed that his hand had lost none of its cunning.

"I now request Mr. A. J. Greenaway to unveil the Plaque."

MR. GREENAWAY then unveiled the Plaque, the company present standing.

PROFESSOR ROBINSON, continuing, said:

"Mr. President, on behalf of the subscribers to the Perkin Memorial Fund, I invite you and the Fellows of the Society to accept this Plaque."

In acknowledging the gift, the PRESIDENT said:

"Professor Robinson, on behalf of the Council and Fellows I have to thank you, and through you the Members of the Memorial Fund Committee, for this Plaque, which will be placed in a prominent position in our rooms and treasured as a memorial of one of our most distinguished Fellows.

"Professor William Henry Perkin showed throughout his life that he held in the highest esteem the aims and objects for which this Society was founded, and his services as Councillor, Vice-President, and President will be remembered as examples of his devotion to its work. Our Journal contains most of the large number of scientific communications he published, and these stand as a record of achievement surpassed by few.

"It is probable that the Plaque will have only a temporary home in these premises, but you can be assured that when our new building is ready it will be placed in a prominent position among, I hope, a number of other memorials of our distinguished dead. As a Society we are singularly lacking in these, and I hope that

Reproduced by the courtesy of "The Chemical Age" [*Sculptor, Ernest Gillick*

Perkin Memorial Plaque

presented to

The Chemical Society

by

The Perkin Memorial Fund Committee

OCTOBER 16th, 1930

this will be borne in mind when we occupy our new premises. It is indeed remarkable that we have no memorial, for example, of Sir William Ramsay. It is fitting that this Plaque should have been prepared in triplicate, and that one should be placed in Manchester, another in London, and a third in Oxford, the places in which his greatest work was carried out."

Professor W. N. Haworth, who was then called upon by the President, delivered the following oration on the Life and Work of the late Professor Perkin :—

An Appreciation of the Life and Work of Professor W. H. Perkin.

"There are occasions when it is meet and wise for us to turn aside from our usual avocations in order to praise famous men.

"Professor W. H. Perkin, whom we commemorate to-day, was deserving of every mark of honour that his pupils and colleagues could bestow. His fame as a teacher and investigator surpassed all ordinary standards, and his memory will continue to inspire those whom he moulded by his influence and supported by his encouragement and example.

"It had been the intention of the subscribers to make this event a celebration of Perkin's seventieth birthday had not death intervened and changed an occasion of joy into a memorial. Generations of his students have united to show gratitude and reverence to a consummate master, and to express a devotion which lapse of time did not impair. All who knew him as a Professor in the classroom experienced his unique power as a teacher, while those who were privileged to be his research pupils were conscious of being laid under a debt of obligation which could never be repaid.

"Perkin's span of life was co-extensive with the rise and development of modern structural chemistry. Born in 1860, he was a boy at school when Kekulé propounded his benzene formula. The quadrivalency of carbon had been enunciated only two years before. Hofmann was still Professor at the Royal College in Oxford Street, and Perkin, senior, had achieved early success in establishing the industry of synthetic dyestuffs. To the son of such a father there never seemed to be any doubt as to his choice of a vocation.

"Mr. Greenaway has recalled how W. H. Perkin, junior, outshone all his contemporaries among the chemistry students at South Kensington under Sir Edward Frankland; how he speedily worked through the ordinary course of instruction and proceeded beyond it; how he was provided with facilities for the pursuit of more advanced experiments and research. In 1880

there appeared in our *Journal* Perkin's first paper, published conjointly with Dr. W. R. Hodgkinson of the Royal College, his first teacher (along with Mr. Greenaway) in practical chemistry. Eventually, under Dr. Hodgkinson's persuasion, reinforced with that of Mr. Greenaway, W. H. Perkin, senior, was induced to give consent for his son to proceed to Germany to study under Wislicenus. Under the guidance of Wislicenus at Würzburg Perkin soon won recognition, and in his Wislicenus Memorial Lecture he has placed on record his obligation to this great teacher: 'The intellectual development of young chemists was to Wislicenus a study as absorbing as any of his chemical problems.' Perkin graduated at Würzburg in 1882, and proceeding from there to Munich, he found, during his four years' association with Adolf Baeyer, his real spiritual home. 'There was something in Perkin which responded to every note struck by the older man, who became the object of a lifelong intellectual devotion.' Of the excellence of Baeyer's experimental methods Perkin always spoke with enthusiasm. After a short time he won Baeyer's warm approbation, and became in turn Privat-dozent and research assistant. It was here that Perkin began that series of researches, which he continued with such zeal and success, on the synthesis of closed carbon chains. The history of this early development of the chemistry of the *cyclo*-paraffins has been sketched for us in his Pedler Lecture. He returned to this topic again and again, nor did he leave it finally until he had synthesised every naturally occurring monocyclic terpene and investigated the constitution of camphor and its analogues. In recognition of this work, he received at an earlier age than is usual the Davy Medal of the Royal Society.

"It would be a mistaken impression if it were gathered that Perkin during all these strenuous days was a man of one interest only. From early boyhood he had been imbued with a love of music, which had been fostered by his father and uncle throughout his home life. Every member of Sir William Perkin's family played at least one musical instrument, and together they constituted an orchestra of no mean accomplishment. W. H. Perkin, junior, played the violin and the piano, and from the latter instrument he became inseparable for at least part of every day of his life.

"As a student at Würzburg contemporaneously with Perkin was another Royal College man, Thomas Purdie, later Professor of Chemistry at St. Andrews. Both from Purdie and Mrs. Purdie, who had married before going to Würzburg, I heard something of Perkin's mode of life in Germany. The Purdies lived in furnished rooms in Würzburg, and Perkin often visited them in the evenings after a long day's work in the laboratory, staying afterwards for

supper, and also to help in washing and drying the dishes. Purdie was amazed at the younger man's vitality, for leisure from strenuous research did not mean to him resting, but took the form almost nightly of visits to the theatre or the ballroom. So much so that Purdie remonstrated with him, and suggested that he might undermine his health. But Perkin's answer was that he found it a mental relaxation, and also the best way of learning German well and of familiarising himself with German life and custom. There can be no doubt that his experiences at this time, and especially afterwards at Munich, expanded his outlook on many aspects of life and made him a shrewd and excellent judge of men. [It was characteristic of Perkin later in life that he was never taken in by bluff or guile. One swift retort silenced those who had the audacity to attempt it. His reminiscences of a few such occasions provided him with amusing anecdotes.]

"Returning to this country from Munich in 1886, he worked for a short time in Manchester at the invitation, and by the courtesy, of Professor H. B. Dixon, and here he began the investigation of the natural colouring matters, brazilin and hæmatoxylin. Shortly afterwards he was called to his first Chair at the Heriot Watt College, Edinburgh, which he held for six years. At Edinburgh he commenced the series of researches on the alkaloids berberine, and cryptopine; the constitution of these and of other alkaloids was finally established many years later in collaboration with Professor Robinson, and by their synthesis.

"On the death of Schorlemmer, Perkin was invited to the Chair of Organic Chemistry in Owens College, Manchester, in 1892. It was now possible for him to build up a great School of Research, and it was here that he entered upon that exceedingly productive period which he once spoke of to me as his 'golden age' of research. Fischer once declared that it rivalled his own school at Berlin. The large Schorlemmer laboratory was filled by his students, and later there was added the Perkin private laboratory, together with the splendid building which had been the working home of Dr. Edward Schunck. The latter comprised the large, beautifully furnished library with Schunck's collection of books and the suite of laboratories. The building was removed, brick by brick, from Kelsall near Manchester, and re-erected as an annexe to the University. In the library one combined one's study of the chemical journals with the contemplation of the signs of the Zodiac which decorated the ceiling. This commodious series of rooms satisfied the needs of a large staff of research workers for many years, until the extension of the Morley laboratories was added.

"There is no doubt that Perkin found his work in Manchester

very congenial. On four mornings a week he lectured at 9.30, and on two of these mornings, in preparation for the general class, he arrived at 8.30 or a quarter to nine to superintend his assistant's arrangement of the lecture-table. It was common knowledge that before he appeared at the laboratory he had occupied himself from 6 a.m. with practice at the piano or in the cultivation of his garden. He illustrated the more elementary lectures of the general class by numerous experiments, which were elaborated with meticulous care. Up to the moment of his entering the lecture-room he was preoccupied with his notes and with the sketching anew of such formulæ as he wished to illustrate on the blackboard. He took his lectures very seriously, and spent much nervous energy in his preparation for the delivery of them. He spoke in clear tones, with an easy flow of words, and the precise arrangement of his formulæ and other details on the blackboard was ideally perfect. It is here that he excelled in the little comparisons or summaries of salient properties which he presented, and as a prelude to which he invariably announced, 'Let us now make a little table!' In the advanced class his lectures covered, with great clearness of treatment, the more conspicuous researches on a selected group of products, and also dealt with important synthetic methods. He developed a habit which had the effect of impressing students with the intimacy between his lectures and the original papers themselves, and this was achieved by some such phrase as 'I was reading again Victor Meyer's original paper on this subject last night.' One's notes on these lectures are as interesting after twenty-five years as on the day they were given.

"The rest of Perkin's day was devoted to research students and to experimental work at his bench until 3.30 or 4 o'clock, with never more than an interval of half an hour for lunch at 12.30. Beginning at one end of a large clear bench stocked with newly washed and dried apparatus (he always kept a washing-up boy busy), he gradually accumulated the soiled beakers and test-tubes at the other end, until there was little working space left, and then he went home. But within the space of four hours he contrived to get through more work than any of his collaborators could accomplish in twice the time. The evening was available for entertainment, orchestral music in his drawing-room with invited friends or musicians from the Hallé, or, in the case of most evenings, for the composition and writing of his original papers, which he always typed himself. A privilege he afforded to his senior research workers was to be invited to hear music at his house and to meet distinguished guests from other Universities or from the Continent.

"To see Perkin at work was a mental stimulus and inspiration.

His skill in manipulation, combined with his judgment and observation, filled one with wonder. He could coax a reaction into being and maintain it under control by what seemed very simple means, while, pencil in hand, and as the reaction proceeded, he would carefully record every change of appearance or condition. It was not only from the final achievement of his inquiry that he derived pleasure. He extracted genuine enjoyment and delight from witnessing a reaction and making a record of it.

"From his long and varied experience he had acquired an insight into chemical behaviour which was well-nigh uncanny; and his quick judgment on the nature of his products was equally remarkable. An unwanted by-product was detected as such almost at a glance, whilst the important and desired product was seized upon with unerring certainty. By his co-workers it came to be regarded as sufficient and final evidence that a reaction did not 'go' if Perkin failed in his attempt of it. Visitors to his laboratory must often have found him in one of the characteristic attitudes which he assumed when at work. His personal appearance at this time had not undergone that transformation which occurred when he shaved off his full beard. Standing at his bench (he never sat down except to consult 'Beilstein' at his table or to take a melting point) controlling the vacuum distillation of a frothing liquid in a Claisen flask by directing on to the walls of it a long 'stiff' Bunsen flame, and with the other hand gathering the fractions of distillate into the receiver attached to his 'Perkin triangle'; or, with filter funnel and fluted paper in readiness, dissolving a crude solid in a wide test-tube preparatory to its crystallisation; then, in brief minutes, the garnering of the 'beautiful crystals' on his large platinum spatula. An envious but irreverent pupil once said of Perkin that he could induce any substance to crystallise for the reason that out of the vast number and variety of crystalline products he had handled of every geometrical form he always secreted a suitable nucleus in his beard.

"He often worked on the very small scale, but those who were associated with him well knew that such a trifle as the scarcity of a material never deterred him. When he had come to a decision to proceed with a synthesis or a breakdown process, a research collaborator would be invited to undertake large-scale operations involving the consumption of kilograms of initial reagents. The preparation would be carried from stage to stage, Perkin himself undertaking the purification of the intermediate products, until the desired amount of the necessary starting material was forthcoming for the new work which was projected. The expense was a secondary consideration.

"A means by which Perkin controlled the results of his co-workers before publication was by having all important analyses carried out by his assistant.* In the Manchester days this duty fell to his private research assistant, and in my own experience of these duties I well remember how he presented me one day with a newly prepared substance, the appearance of which gave me some surprise, and Perkin noticed my hesitation. It was a lustrous black material resembling coal, not at all like the 'beautiful crystals' he was so much in the habit of describing. The analysis was carried out and the result handed to him, with which he seemed pleased. Then I learned that he had dreamt the previous night of a new reaction he might try with brazilin in the expectation of a new oxidation product, and, on his trying it out, my analysis had confirmed his dream.

"Perkin's close and intimate interest in the work of his pupils, and the help and encouragement he gave them, resulted in an *esprit de corps* and a personal loyalty to himself which were the greatest incentive to good work and to the progress of research. Each put his best into the work of the school. Hours were long, but there was great concentration, and all displayed keenness to succeed. Seldom did the type of man remain who confessed that he did only a 'sporting' amount of work. To Perkin it seemed incomprehensible that any one who claimed chemistry as a profession should fail to take an interest in original research, and such a one he held to be of little account.

"In an atmosphere which was charged with Perkin's keenness and zeal, scientific investigation could not do other than flourish, and the school grew round the man, bringing with it success and wide recognition.

"With Perkin research was a ruling passion which he communicated to everyone who worked with him, and it is sufficient to say that many of his pupils when placed in other environments found their sustaining force in Perkin's example. Some will recall the different atmosphere they encountered when they moved on and discovered that in some quarters original research was considered of little account, and even a hindrance to the fulfilment of one's teaching duties. If that feeling no longer exists in the Universities in this country, and if the participation in the extension of the boundaries of knowledge has become recognised and has taken its place among the chief duties of a University teacher, then that reform is due in considerable measure to the persistence with which it was advocated by Perkin and a few others who were his contemporaries. Professor Meldola, in a moving appeal which he made in his Presidential Address to this Society in 1907, deplored the meagreness of the research spirit of that period in the British

Universities and Colleges. Professor Meldola said, 'It is only necessary to call to mind the productive activity in the Continental Universities as compared with our own. Judged by this standard, there can be only one conclusion—that many of our Universities are distinct failures as centres of chemical research, and that the total output of work from University laboratories is by no means worthy of the great traditions of this country as a pioneering nation in scientific discovery.' He went on to say, 'From . . . University laboratories we receive occasional communications, these being for the most part the work of the Professors. But with the exception of Manchester, it cannot be said that in any of our Universities has there been called into existence an active centre of chemical research in a school in the Continental sense of the term.' This service Perkin rendered at a critical time in the history of chemistry in Britain. He founded a school which, like that of Meldola, of Armstrong and of a few others, won a place of honour for organic chemistry in this country.

"Of Perkin's later life and work at Oxford from 1912 to 1929 Professor Robinson will doubtless speak in the course of the next few days when a similar memorial is to be unveiled in the laboratories there. Sufficient is it for me to say that the great work that Perkin did for Oxford is appreciated nowhere more than in Oxford itself.

"To those who sought his advice about their promotion to better appointments Perkin invariably gave the same characteristic answer: 'If you put all your abilities into the doing of important original work there can be not the least doubt that your merit will be recognised.' He never used his great influence unduly on behalf of an aspirant. But whenever he was impressed by a piece of work which one of his former pupils had published he never failed to write him an appreciative and encouraging letter.

"In the too early death of Perkin, Chemistry has lost one of the most powerful exponents of the science that this country has known. We shall miss from our midst his impressive, kind personality, and we shall miss, too, the continuance of the brilliant experimental papers which, over a period of fifty years, he contributed to our English *Journal*. But in our appreciation of his life and his achievements, the feeling which will remain dominant in our minds is one of gratitude for a great leader, who consecrated his ability and intellect to the one ideal for which this Society exists, the ideal embodied in the creed—'that original research is in itself and by itself the most powerful weapon that ever can be wielded by mankind in struggling with the great problems which nature offers on all sides for solution.'"

Ordinary Scientific Meeting, Thursday, October 23rd, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

In referring to the death of Professor H. B. Dixon the PRESIDENT said :

"I have with deep regret to announce the death of Professor Harold Baily Dixon, of Manchester University, which occurred suddenly on September 18th last.

"The Council at its meeting on October 2nd passed the following resolution :

> "The President, Council, and Fellows of the Chemical Society desire to express their deep sorrow at the death of Professor Harold Baily Dixon. They recall with gratitude his eminent services to the Society as Councillor, Vice-President, and President, and mourn the loss of one who, by his pioneer work on the nature of explosions in gases, has added notably to the advancement of chemical science.
>
> "They desire to convey their sincere sympathy to Mrs. Dixon and family in the great loss they have sustained."

"Professor Harold Baily Dixon was born on August 11th, 1852, and was the second son of William Hepworth Dixon, for some years editor of the *Athenæum*. He was educated at Westminster School and at Christ Church, Oxford, subsequently being elected to Fellowships at Trinity College (1875) and at Balliol College (1881).

"It is just fifty years ago—that is, at the Swansea meeting of the British Association in 1880—that Dixon described his epoch-making discovery to the effect that carbon monoxide and oxygen in combining proportions cannot be ignited by the electric spark if the mixture has been previously subjected to prolonged drying over phosphoric anhydride. The importance of this discovery can hardly be over-estimated. It gave an impetus to research on gaseous explosions which was destined, during the succeeding fifty years, to produce a wealth of new knowledge, to the accumulation of which Dixon and his pupils were the main contributors. He quickly became the acknowledged leader in this field, to which he devoted his life's work.

"Appointed to succeed Sir Henry Roscoe at Owens College in 1886, he rapidly established there a school of research from which he sent pupils to all parts of the world. He retired in 1922 at the age of seventy, but retained his research laboratory in the University. At the time of his death he was actively engaged on

important research work for the Safety in Mines Research Board, and was, indeed, at work on the morning of the day he died.

"He gave this Society full measure of service. He was a Member of Council from 1892 to 1896 and President from 1909 to 1911. He served as Vice-President for no less than nineteen years."

The PRESIDENT also announced the death of Joseph Achille Le Bel (Honorary Fellow), which occurred on August 6th, 1930. He stated that the name of Le Bel with that of van 't Hoff would always be associated with the classical researches on the tetrahedral structure of the carbon atom.

The PRESIDENT then referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Tom St. John Belbin	June 18th, 1891.	Sept. 27th, 1930.
Arthur Horrobin	May 7th, 1908.	Feb. 20th, 1930.
Qasim Ali Mansuri	May 5th, 1921.	Mar. 10th, 1930.
John T. A. Walker	Dec. 6th, 1900.	July 27th, 1930.

The PRESIDENT announced that:

1. The following Address of Congratulation had been sealed in Council on October 2nd, and had been presented to the University of Birmingham on the occasion of the Jubilee of the Foundation of Mason Science College and the 30th Anniversary of the granting of the Charter to the University of Birmingham on Monday, October 13th, 1930:

THE CHEMICAL SOCIETY
to the
UNIVERSITY OF BIRMINGHAM.

The President, Officers, Council, and Fellows of the Chemical Society offer to the Chancellor and Council of the University of Birmingham their sincere congratulations on the occasion of the JUBILEE of the FOUNDATION of MASON SCIENCE COLLEGE and the THIRTIETH ANNIVERSARY of the GRANTING of the UNIVERSITY CHARTER.

The Munificent Benefaction of Sir Josiah Mason, and the devoted efforts of the Council and Staff of the College established in Birmingham a centre of Higher Education for the Midland Counties which rapidly became of national importance. The grant of the University Charter in 1900 was a fitting recognition of the great achievements of Mason Science College and gave a stimulus to the further development which, in twenty years, has raised the University of Birmingham to a prominent place among the Universities of the world.

In conveying the good wishes of the Chemical Society for the continued welfare and prosperity of the University of Birmingham in all its Faculties, the Council places on record its high appreciation of the fundamentally important investigations which have been carried out under the auspices of those who have occupied the Chair of Chemistry in the Mason Science College and the University.

Signed on behalf of the Chemical Society,

JOCELYN THORPE, *President.*
T. SLATER PRICE, *Treasurer.*
L.S.
C. S. GIBSON, } *Secretaries.*
T. S. MOORE, }
F. G. DONNAN, *Foreign Secretary.*

Sealed in Council this Second Day of October, One Thousand Nine Hundred and Thirty.

BURLINGTON HOUSE,
LONDON, W. 1.

2. The death of Professor Dixon necessitated an alteration being made in the delivery of the Liversidge Lecture, which he was to have given on November 27th. The Council has asked Professor W. A. Bone, D.Sc., Ph.D., F.R.S., to deliver the Third Liversidge Lecture, and he has agreed. He has chosen as his title "Fifty Years' Experimental Research upon the Influence of Steam on the Combustion of Carbonic Oxide (1880–1930)." The Lecture will be illustrated by experiments and lantern slides and will be delivered in the Lecture Theatre of the Imperial College of Science and Technology (by the courtesy of the Governors) on Thursday, December 11th, 1930, at 5.30 p.m.

Messrs. L. A. Warren and F. Bryans were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Frederick George Angell, B.Sc., 32, Pinner Road, Harrow.
William Edward Batten, A.R.C.S., 41, Calais Gate, Myatts Park, S.E. 5.
Ernest George Beckett, Ph.D., F.I.C., Gilmerton, Larbert, Stirlingshire.
Hugh Kenneth Black, B.Sc., 63, Middle Street, Brighton.
George Frederic Bloomfield, B.Sc., A.R.C.S., 27, Belmont Avenue, Tottenham, N. 17.
John Bradley, B.A., B.Sc., 25, Lamel Street, York.
Dhirendra Nath Chakravarti, M.Sc., King Edward College, Amraoti, India.
Frederick Charles Clapham, 90, The Portway, West Ham, E. 15.
Ernest Gordon Cox, B.Sc., 352, Shirley Road, Acocks Green, Birmingham.
Harold Albert Hadleigh Crowther, Claremont, Cedar Road, Croydon.

Arthur Lawrence Fox, B.A., M.S., Ph.D., 1103, Blackshire Road, Wilmington, Delaware, U.S.A.

Herbert Freundlich, Prof., Ph.D., Enzianstrasse 3, Berlin-Lichterfelde, Germany.

Bhawan Showkiram Gidvani, B.Sc., c/o The American Express Co., 6, Haymarket, S.W. 1.

Joseph Glassman, B.Sc., 108, Goldsmith's Row, Hackney, E. 2.

Evelyn Reid Lindsay Gow, B.Sc., 31, Windsor Street, Dundee.

Arthur Neville Hambly, 15, Moubray Street, Melbourne, Australia.

Ralph Gordon Harry, 183, Cathedral Road, Cardiff.

Margaret Mary Healey, B.Sc., 79, Pope's Avenue, Twickenham.

Robert Haxwell Hicks, B.Sc., 65, Romilly Road, Cardiff.

Cyril Gustav Bidwell Hose, A.R.C.S., 36, Vartry Road, Stamford Hill, N. 15.

George Harold Jeffery, B.Sc., Redbourne, Lordswood Avenue, Bassett, Southampton.

Matsusuke Kobayashi, Prof., D.Sc., Chemical Institute, Tohoku Imperial University, Sendai, Japan.

Ralph Arthur Letch, A.R.C.S., Ebenezer Cottage, Shenley, near Barnet.

William Byres McKay, B.Sc., 20, Dundee Road, Forfar.

George W. G. Maclennan, M.A., B.Sc., 9, Park Walk, Chelsea, S.W. 10.

John Macniven, Lohat P.O., District Darbhanga, B. & N.W. Rly., India.

Roy James Macwater, B.Sc., Anglesea, Maple Road, Ashtead, Surrey.

Kishen Lal Malhotra, M.Sc., 52, Claremont Road, Highgate, N. 6.

Ernest Gilbert Noble, A.R.C.S., 22, Dartmouth Park Road, N.W. 5.

Clifford Arthur Rhodes, B.Sc., 38, Granny Lane, Mirfield, Yorks.

Anthony Melland Robinson, B.A., The Châlet, Lindfield, Sussex.

Chandulal Chhotalal Shah, M.Sc., East London College, Mile End Road, E. 1.

George Basil Stafford, B.Sc., 12, The Grove, Southey Street, Nottingham.

John Frederick Felix Trotter, B.Sc., A.R.C.S., 83, Mildred Avenue, Watford.

Evelyn Marie Waldron, B.Sc., The Cedars, Little Marlow Road, Marlow, Bucks.

Eric Mervyn Watson, B.Sc., A.I.C., c/o Agent-General for Western Australia, Savoy House, Strand, W.C. 2.

Evan Clifford Williams, D.Sc., 131, Alvarado Road, Berkeley, Cal., U.S.A.

Patrick Chisholm Young, B.A., c/o Messrs. John Heathcoat & Co., Tiverton, Devon.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2):

John Christie, 174, Eighth Avenue, Mayfair, Johannesburg.

Harold Hinde, 135, Grey Street, Bulawayo.

Gilbert Hayes Whiteford, 1612, S. College, Fort Collins, Col., U.S.A.

The following papers were read:

"Dynamic isomerism involving mobile hydrocarbon radicals. Part II. The intramolecular character of the amidine rearrangement." By A. W. CHAPMAN.

"Dynamic isomerism involving mobile hydrocarbon radicals. Part III. Some effects of substitution on the velocity of

interchange and position of equilibrium of isomeric triarylbenzenylamidines." By A. W. CHAPMAN and C. H. PERROTT.

"The unsaponifiable matter from the oils of elasmobranch fish. Part VII. The synthesis of α-glyceryl ethers and the constitution of batyl, selachyl, and chimyl alcohols." By G. G. DAVIES, I. M. HEILBRON, and W. M. OWENS.

"The unsaponifiable matter from the oils of elasmobranch fish. Part VIII. The structure of the naphthalene hydrocarbon derived from squalene." By I. M. HEILBRON and D. G. WILKINSON.

THIRD LIVERSIDGE LECTURE.

The Third Liversidge Lecture, entitled "Fifty Years' Experimental Research upon the Influence of Steam on the Combustion of Carbonic Oxide (1880–1930)," will be delivered by Professor W. A. Bone, D.Sc., F.R.S., on Thursday, December 11th, 1930, at 5.30 p.m., in the Lecture Theatre of the Imperial College of Science, South Kensington, S.W. 7 (by the kind permission of the Governors).

RESEARCH FUND.

A meeting of the Research Fund Committee will be held in December next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Monday, December 1st, 1930. Applications from Fellows will receive prior consideration.

All persons who received grants in December 1929, or in December of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by December 1st.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

ANNUAL REPORTS.

The price of the Annual Reports for 1930, Volume XXVII, will be 5*s.* 6*d.* to those Fellows who apply before December 31st, 1930.

Application should be made to the Assistant Secretary, and must be accompanied by a remittance.

SPECIAL PUBLICATIONS OF THE SOCIETY.

Fellows are reminded that the following publications can be obtained at the reduced prices mentioned:

	Price.
Memorial Lectures, Vol. I (1893–1900) . .	9*s.* post free.
,, ,, Vol. II (1901–1913) . .	7*s.* ,,
Faraday Lectures (1869–1928) . . .	5*s.* 6*d.* ,,
Photographs of Eminent Chemists, set of 8 .	18*s.* ,,
,, ,, ,, each .	2*s.* 6*d.* ,,

There are also available a few sets of the *Berichte der Deutschen Chemischen Gesellschaft* from 1915 to 1924 (inclusive). Price £22 the set, or £2 5*s.* per annum.

The attention of Fellows engaged in teaching Chemistry is directed to the fact that the Volumes of *Memorial Lectures* and the Volume of *Faraday Lectures* are eminently suitable for presentation as prizes, and the Council would welcome any steps Fellows can take to make these volumes known.

BRITISH CHEMICAL ABSTRACTS "A" FOR 1931.

(*Printed on one side of the page only.*)

The Abstracts "A" (Pure Chemistry) for 1931, printed on one side of the page only, will be issued to Fellows who make application by December 31st, 1930, price £1 10*s.* A remittance for this amount must accompany each application.

PUBLICATIONS OF OTHER SOCIETIES.

Fellows of the Chemical Society who are not members of the Society of Chemical Industry, the American Chemical Society, or the Dutch Chemical Society, may procure the publications of these Societies for 1931 at the following prices:

SOCIETY OF CHEMICAL INDUSTRY.

	Price.
(*a*) Abstracts in Applied Chemistry (exclusive of Index)	£1 10*s.* post free
(*b*) Annual Reports of the Progress of Applied Chemistry for 1930	10*s.* ,,
(*c*) Abstracts in Applied Chemistry (printed on one side of the page only)	£2 10*s.* ,,

Application should be made direct to the Secretary, Society of Chemical Industry, 46 and 47 Finsbury Square, E.C. 2, and should reach him by December 31st, 1930. Fellows resident abroad should apply by return of mail.

AMERICAN CHEMICAL SOCIETY

		*Postage.**
(*a*) Journal of the American Chemical Society . .	$6.25	$1.50
(*b*) Chemical Abstracts	$6.25	$1.50
(*c*) Industrial and Engineering Chemistry . . .	$6.25	$1.50
Price for all three Journals	$15.00	$4.50
Price for any two Journals	$11.50	$3.00
(*d*) Chemical Reviews	$4.00	$0.50

Application should be made direct to the Secretary, American Chemical Society, Mills Building, Washington, D.C., U.S.A., and should be sent as soon as possible.

(*e*) Journal of Physical Chemistry . . . . . $8.00 post free

Application should be made to Mr. W. W. Buffum, The Journal of Physical Chemistry, 654 Madison Avenue, New York City, U.S.A.

* One-half postage rates to Canada. No postage charges to countries in the Pan-American Union and Spain.

NEDERLANDSCHE CHEMISCHE VEREENIGING

(*a*) Chemisch Weekblad . . . . . Fl. 10.25 post free

(*b*) Recueil des travaux chimiques des Pays Bas . . . Fl. 11.50 ,,

Application to be made to Dr. A. D. Donk, Nederlandsche Chemische Vereeniging, Verspronckweg, 100, Haarlem, Holland.

NOTE.—*A remittance, made payable to the Society concerned, must accompany each application.*

List of Papers, or Abstracts thereof, received between June 19th and October 23rd, 1930. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Studies in the naphthalene series. Part II. Some diaryl- and triaryl-methane derivatives of dimethyl-α-naphthylamine." By B. GOKHLÉ and F. A. MASON.

"On the reaction of metals of the alkali or the alkaline-earth group (including magnesium) with water, acids, and alkali hydroxide solutions." By I. IITAKA.

"Phase-rule studies on metallic thiocyanates. Part I. The systems $Ba(CNS)_2$–$NaCNS$–H_2O and $Ba(CNS)_2$–$KCNS$–H_2O at 25°." By V. J. OCCLESHAW.

"The reduction of substituted *p*-benzoquinones by sulphur dioxide alone and in the presence of alkali." By J. W. DODGSON.

"The decomposition of diazobenzene sulphate by aliphatic alcohols." By H. H. HODGSON and A. KERSHAW.

"Catalytic decomposition of some gaseous ethers." By P. A. K. CLUSIUS.

"The complexity of phosphoric oxide." By A. Smits.

"The conductivity of some uni-univalent salts in ethyl alcohol." By E. D. Copley, D. M. Murray-Rust, and Sir Harold Hartley.

"The mobility of the perchlorate ion in methyl alcohol." By E. D. Copley and Sir Harold Hartley.

"Degradations in the sugar group." By V. Deulofeu.

"On the original body of vitamin-*B*." By B. Tanaka.

"Trypanocidal activity and chemical constitution. Part II. New sulphur derivatives of aromatic organic arsenicals (*continued*). Derivatives of 2-thiolbenziminazole-5-arsenic acid." By J. G. Everett.

"A few remarks on the paper by (Miss) Tempe M. Fenton and William Edward Garner entitled 'The heats of association of acetic and heptoic acids in the vapour state.'" By H. Dohse and M. Dunkel.

"Aromatic acid amides. Part I. The preparation of benzamide." By C. H. Kao and S. Ma.

"Stereoisomerism in substituted 1 : 2 : 3 : 4-tetrahydroquinolines. Part II." By S. G. P. Plant and R. J. Rosser.

"The calculation of activity coefficients from solubility measurements. Part II. Thallous iodate." By C. W. Davies.

"The calculation of activity coefficients from solubility measurements. Part III. The unsymmetric valence type effect." By C. W. Davies.

"The correlation of certain photochemical reactions and wavelength. Part I." By F. C. Hymas.

"The interaction between alkyl Grignard reagents and arsenic trichloride." By W. J. C. Dyke and W. J. Jones.

"The ionisation constants of some chloro- and nitro-anilines by the partition method." By G. Williams and F. G. Soper.

"Some 4-alkyl derivatives of 1-phenyl*cyclo*hexane-3 : 5-dione." By I. H. S. Mattar, J. J. H. Hastings, and T. K. Walker.

"Germanium. Part VIII. The action of ammonia on germanium tetrachloride–germanium imide." By J. S. Thomas and W. Pugh.

"The structure of *iso*anethole." By G. D. Goodall and R. D. Haworth.

"On the formation of *p*-diphenylbenzene." By J. E. Sisson.

"Polycyclic aromatic hydrocarbons. Part II. Derivatives of 1 : 2 : 5 : 6-dibenzanthracene and 1 : 2 : 7 : 8-dibenzanthracene." By J. W. Cook.

"The potential of the iridi-iridochloride electrode." By H. Terrey and H. C. Baker.

"Studies in the sterol group. Part XI. The relationship of the fully saturated derivatives of ergosterol and sitosterol." By F. S. SPRING.

"Synthesis of alkyl naphthalenes. Part II. 1 : 3 : 5- and 1 : 3 : 8-Trimethylnaphthalene." By I. M. HEILBRON and D. G. WILKINSON.

"Note on the parachor and valency." By T. IREDALE.

"Metallic hydroxy-acid complexes. Part V. Neutral α-cupritartrates." By E. E. WARK and I. W. WARK.

"The latent heats of evaporation of nitromethane and benzonitrile." By J. C. PHILIP and S. C. WATERTON.

"The parachor and chemical constitution. Part XV. The constitution of sulphinium and ammonium mercuri-iodides (iodomercuriates)." By H. J. CAVELL and S. SUGDEN.

"The constitution of double sulphonium mercuric iodides. The optically active tri- and tetra-iodomercuriates and cadmium tetra- and penta-iodides derived from *l*-methylethylphenacylsulphonium iodide." By M. P. BALFE, J. KENYON, and H. PHILLIPS.

"A labile compound of benzeneazo-β-naphthol and β-naphthol." By H. H. HODGSON and W. ROSENBERG.

"A general method for the preparation of thiocyanine dyes. Some simple thiocarbocyanines." By N. I. FISHER and F. M. HAMER.

"The synthesis of di*iso*propylmalonic acid and some related compounds; with some observations on the polar character of the *iso*propyl radical." By F. C. B. MARSHALL.

"Aromatic arsenic compounds containing sulphur groups attached to the nucleus. Part II. Thiocyano- and disulphido-groups." By H. J. BARBER.

"Researches in the menthone series. Part VII. The condensation of menthylamines with *d*- and *l*-oxymethylenecamphor." By J. READ and C. C. STEELE.

"Analogues of the diphenylhydroxyethylamines. Part I. Di-*p*-methoxyphenylhydroxyethylamine and di-3 : 4-methylenedioxyphenylhydroxyethylamine." By J. READ and I. G. M. CAMPBELL.

"Analogues of the diphenylhydroxyethylamines. Part II. β-Phenyl-β-hydroxyethylamine and some derivatives." By J. READ and (MISS) I. G. M. CAMPBELL.

"Digitalis glucosides. Part II. Digoxigenin, the aglucone of digoxin." By S. SMITH.

"Stereochemical influences on aromatic substitution. Substitution derivatives of 5-hydroxyhydrindene." By W. H. MILLS and I. G. NIXON.

"The photochemical union of hydrogen and chlorine. Part I. The effect of light intensity." By A. J. ALLMAND and E. BEESLEY.

"The photochemical union of hydrogen and chlorine. Part II. The effect of wave-length measurements with filtered light." By A. J. ALLMAND and E. BEESLEY.

"The interaction between iodine pentoxide and nitric oxide." By M. S. SHAH and T. M. OZA.

"The organic compounds of gold. Part I. Diethyl-gold bromide and some derivatives." By C. S. GIBSON and J. L. SIMONSEN.

"Syntheses with ββ′-dichlorodiethyl ether. Part I. Some derivatives of tetrahydropyran." By C. S. GIBSON and J. D. A. JOHNSON.

"Isolation of a new complex hydrocarbon of the probable formula $C_{16}H_{14}$." By C. S. GIBSON and J. D. A. JOHNSON.

"Researches in the menthone series. Part VIII. Further characterisation of the optically active menthylamines." By J. READ and R. A. STOREY.

"The structure of carbohydrates and their optical rotatory power. Part I. General introduction." By W. N. HAWORTH and E. L. HIRST.

"The structure of carbohydrates and their optical rotatory power. Part II. 4-Glucosido-α-mannose and its derivatives." By W. N. HAWORTH, E. L. HIRST, H. R. L. STREIGHT, H. A. THOMAS, and J. I. WEBB.

"The structure of carbohydrates and their optical rotatory power. Part III. 4-Galactosido-α-mannose and its derivatives." By W. N. HAWORTH, E. L. HIRST, (MISS) M. M. T. PLANT, and J. W. REYNOLDS.

"The structure of carbohydrates and their optical rotatory power. Part IV. Derivatives of α- and β-methylmannopyranoside." By H. G. BOTT, W. N. HAWORTH, and E. L. HIRST.

"The structure of carbohydrates and their optical rotatory power. Part V. The optical rotatory powers of methylated lactones derived from the simple sugars." By W. N. HAWORTH, E. L. HIRST, and J. A. B. SMITH.

"The ternary system zinc oxide–zinc chloride–water. (Remarks on the paper by H. C. Holland.)" By W. FEITKNECHT.

"Quinoline compounds containing arsenic. Part II. Synthesis of 6-methoxyquinoline derivatives of aminophenylarsinic acids by the use of 4-bromo-6-methoxy-2-methylquinoline." By R. H. SLATER.

"The arsinic acids of *o*-aminophenol." By M. A. PHILLIPS.

"On the disturbance of neutrality of solutions during electrodialysis." By M. WEIZMANN and J. YOFFE.

"Researches on residual affinity and co-ordination. Part XXXII. Complex salts of bivalent silver." By G. T. MORGAN and F. H. BURSTALL.

"The vapour pressure of chlorine monoxide." By C. F. GOODEVE.

"Syntheses with ββ′-dichlorodiethyl ether. Part II. Heterocyclic compounds containing two atoms of the oxygen group in the ring. 1 : 4-Selenoxan and its derivatives." By C. S. GIBSON and J. D. A. JOHNSON.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 2, II Hälfte, Heft v. Berlin 1930. pp. 2586 to 2878. *M.* 16. (*Recd.* 22/9/30.) From the Publishers: Herren Urban & Schwarzenberg.

ACTA UNIVERSITATIS VORONEGIENSIS. Vol. II, etc. Voroneff 1925 +. (*Reference.*) From the University.

BARGER, GEORGE. Some applications of organic chemistry to biology and medicine. New York 1930. pp. viii + 186. ill. 12*s.* 6*d.* net. (*Recd.* 2/10/30.) From the Author.

BRIGGS, WILLIAM, and STEWART, ROBERT WALLACE. Qualitative analysis. 2nd edition. Revised by DOUGLAS ROSEBERY SNELLGROVE. London 1930. pp. xii + 171. ill. 4*s.* net. (*Recd.* 1/7/30.) From the University Tutorial Press.

BRISSON, [MATHURIN JACQUES]. Dictionnaire raisonné de physique. 3 vols. Paris 1781. pp. xvi + 708, iv + 770, vi + 90 plates. (*Reference.*) From Mr. J. A. Audley.

—— Observations sur les nouvelles découvertes aërostatiques, et sur la probabilité de pouvoir diriger les ballons. Paris 1784. pp. ii + 34. (*Reference.*) [Bound as supplement to "Dictionnaire raisonné de physique," Vol. 2.]

DELANGE, RAYMOND. Essences naturelles et parfums. Paris 1930. pp. 222. 10 *fr.* 50. (*Recd.* 23/6/30.) From the Publishers: Librairie Armand Colin.

ÉTUDES CHIMIQUES sous forme de dictionnaire. MS. 2 vols. [n.d.] pp. [234, 255.] ill. (*Reference.*) From Mr. J. A. Audley.

ÉTUDES METALLURGIQUES. MS. [n.d.] pp. 87. (*Reference.*) From Mr. J. A. Audley.

GODLEWSKI, EMILE. Oeuvres. Vol. I. (1870–1890.) Edited by LADISLAS VORBRODT. Cracovie 1930. pp. viii + 599. ill. (*Recd.* 15/10/30.) From the Académie Polonaise.

HALDANE, JOHN BURDON SANDERSON. Enzymes. (Monographs on Biochemistry.) London 1930. pp. viii + 235. ill. 14*s.* net. (*Recd.* 7/10/30.)

From the Publishers: Messrs. Longmans, Green & Co.

HALDANE, JOHN SCOTT. The theory of heat-engines including the action of muscles. Edinburgh 1930. pp. xvi + 120. 6*s.* net. (*Recd.* 18/8/30.) From the Publishers: Messrs. Oliver & Boyd.

HUNTRESS, ERNEST HAMLIN. A brief introduction to the use of Beilstein's Handbuch der organischen Chemie. New York 1930. pp. viii + 35. (*Reference.*) 5*s.* net.

From the London Publishers: Messrs. Chapman & Hall.

IMPERIAL COLLEGE CHEMICAL SOCIETY. Journal. Vols. VI–IX. London 1927–30. (*Reference.*) From the Society.

INSTITUT DU PIN. Bulletin. Sous le controle de l'Institut des Recherches agronomiques et rattaché à la Faculté des Sciences de Bordeaux. 2nd Series. No. 1, etc. Bordeaux 1930 +. (*Reference.*) From the Institute.

KEIJO IMPERIAL UNIVERSITY. Acta Medicinalia in Keijo. Vols. XI and XII. Keijo 1928–29.

Continued as:—

—— Keijo Journal of Medicine. Vol. I, etc. Keijo 1930 +. (*Reference.*) From the University.

KRAFFT, CARL F. Spirazines: a type of chemical structure bearing upon the constitution of proteins and the cause of life. Washington 1930. pp. 54. ill. $1 net. (*Recd.* 16/10/30.) From the Author.

LATVIJAS ŪNIVERSITĀTES RAKSTI. Kīmijas Fakultātes Serija. Vol. I, etc. Riga 1929 +. (*Reference.*)

From Professor Dr. A. Petrikaln.

MACQUER, [PIERRE JOSEPH.] Dictionnaire de chimie. 2nd edition. [4to]. 2 vols. Paris 1778. pp. lii + 687, iv + 856. ill. (*Reference.*) From Mr. John Pennell.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. Course of general (inorganic) chemistry. 3rd edition. Moscow 1930. pp. 642. ill. [In Russian.] (*Recd.* 18/8/30.) From the Author.

PINE INSTITUTE OF AMERICA. Abstracts. Chemical Section. Vol. IV, No. 7, etc. Pittsburgh 1930 +. (*Reference.*) [In mimeograph form.] From Dr. Henry de Laszlo.

RUBBER INFORMATION. A compendium of the rubber industry in all its branches. Edited by HARRY BRENNAN CRONSHAW. London 1930. pp. 237. (*Reference.*) 10*s.* net.

From the Publishers: Messrs. Leonard Hill.

STATE COLLEGE OF WASHINGTON. Research Studies. Vol. I, etc. Pullman, Washington 1929 +. (*Reference.*) From the Editor.

STEPHENSON, MARJORY. Bacterial metabolism. (Monographs on Biochemistry.) London 1930. pp. xii + 320. ill. 18*s*. net. (*Recd.* 7/10/30.)

From the Publishers: Messrs. Longmans, Green & Co.

SYDNEY, UNIVERSITY OF. Journal of the Cancer Research Committee. Vol. I, etc. Sydney 1929 +. (*Reference.*)

From the Editor.

TAUSSIG, RUDOLF. Die Industrie des Kalziumkarbides. (Monograph. angew. Electrochem. Vol. 51.) Halle (Saale) 1930. pp. xvi + 519. ill. *M*. 60. (*Recd.* 14/10/30.)

From the Publisher: Herr Wilhelm Knapp.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V, part vi. Berlin 1930. pp. 1173 to 1348. ill. *M*. 10. (*Recd.* 14/10/30.)

From the Publishers: Herren Urban & Schwarzenberg.

TOKYO BUNRIKA DAIGAKU. Science Reports. Section A. Vol. I, etc. Tokyo 1930 +. (*Reference.*) From the Editor.

UKRAINIAN COUNCIL SOCIALIST REPUBLIC. Scientific Magazine of the Chemical Cathedar of Katerynoslaw. Ukraine 1926. (*Reference.*) From the Editor.

II. *By Purchase.*

BARCHUSEN, JOHANN CONRAD. Elementa Chemiæ, quibus subjuncta est Confectura Lapidis Philosophici. Lugduni Batavorum 1718. pp. [xii] + 532 + [19]. ill. (*Reference.*)

CURTIS, C. A. Artificial pigments and their applications. Translated by ERNEST FYLEMAN. London 1930. pp. viii + 291. 21*s*. net. (*Recd.* 16/10/30.)

EDER, JOSEF MARIA. Ausführliches Handbuch der Photographie. 6th edition. Vol. III. Part i. Die Fabrikation der photographischen Platten, Filme und Papiere und ihrer maschinelle Verarbeitung. By FRITZ WENTZEL. Halle (Saale) 1930. pp. xx + 595. ill. *M*. 48.50. (*Recd.* 6/10/30.)

EDWARDS, JUNIUS DAVID, FRARY, FRANCIS C., and JEFFRIES, ZAY. The aluminium industry. 2 vols. (Chemical Engineering Series). New York 1930. pp. xviii + 870, xii + 358. ill. 60*s*. net. (*Recd.*16/10/30.)

FULMER, ELLIS I., and WERKMAN, C. H. An index to the chemical action of microorganisms on the non-nitrogenous organic compounds. [Springfield, Ill.] 1930. pp. xiv + 198. (*Reference.*) 20*s*. net.

HERZ, WALTER. Physikalische Chemie als Grundlage der analytischen Chemie. 3rd edition. In collaboration with L. LORENZ. (Die chemische Analyse, Vol. III.) Stuttgart 1930. pp. viii + 310. ill. (*Reference.*) *M*. 19.

KRUYT, HUGO RUDOLPH. Colloids : a textbook. Translated by HENRY S. VAN KLOOSTER. 2nd edition. New York 1930. pp. xiv + 286. ill. 17*s*. 6*d*. net. (*Recd*. 16/10/30.)

PAYMAN, WILLIAM, and STATHAM, IRA CECIL FRANK. Mine atmospheres. London 1930. pp. xii + 336. ill. 10*s*. 6*d*. net. (*Recd*. 16/10/30.)

POUCHER, WILLIAM ARTHUR. Perfumes, cosmetics and soaps with especial reference to synthetics. 3rd edition. Vol. I. London 1930. pp. x + 394. ill. 21*s*. net. (*Recd*. 19/8/30.)

PREGL, FRITZ. Quantitative organic microanalysis. 2nd English edition. Translated by ERNEST FYLEMAN. London 1930. pp. xiv + 237. ill. 15*s*. net. (*Recd*. 16/10/30.)

SCHÄFFNER, ANTON. Enzyme und ihre Bedeutung zur Konstitutionsermittlung von Naturstoffen. (Fortschritte der Chemie, Physik und physikalischen Chemie. Vol. XX.) Berlin 1930.

SOMMERFELD, ARNOLD. Wave-mechanics. Translated by HENRY L. BROSE. Supplementary volume to " Atomic structure and spectral lines." London 1930. pp. xii + 304. ill. 21*s*. net. (*Recd*. 16/10/30.)

THAYSEN, AAGE CHRISTIAN, and GALLOWAY, L. D. The microbiology of starch and sugars. London 1930. pp. viii + 336. 25*s*. net. (*Recd*. 16/10/30.)

TREADWELL, FREDERICK PEARSON. Analytical chemistry. 7th English edition. Vol. I. Qualitative analysis. Translated and revised by WILLIAM THOMAS HALL. New York 1930. pp. x + 610. ill. 23*s*. net. (*Recd*. 22/9/30.)

WEBEL, A. A German-English technical and scientific dictionary. London 1930. pp. xii + 887. (*Reference*.) 36*s*. net.

ZWORYKIN, V. K., and WILSON, E. D. Photocells and their application. New York 1930. pp. xii + 209. ill. 12*s*. 6*d*. net. (*Recd*. 16/10/30.)

III. *Pamphlets*.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Bulletin No. 44. Investigations on " spotted wilt " of tomatoes. By GEOFFREY SAMUEL, J. G. BALD, and H. A. PITTMAN. Melbourne 1930. pp. 64. ill.

BATAVIA. *Proefstation voor Rubber*. Mededeelingen. No. 57. Enquete over de ondernemingsrubber in Java en Zuid-Sumatra. By R. RIEBL. Batavia 1930. pp. 28. ill. [In Dutch. English summary.]

BRAHMACHARI, UPENDRA NATH, and GUPTA, JNANENDRA MOHAN DAS. A contribution to the chemistry of certain new aromatic antimonials. (From the *J. Proc. Asiatic Soc. Bengal*, 1929, **25**.)

COSTA, NORBERTO P. Algunas observaciones relativas a la constitución de cementos. (From the *An. Soc. Científica Argentina*, 1930, **109**.). ill.

DAVIES, JAMES. Newfoundland cod liver oil. St. John's 1930. pp. 30. ill.

DEAN, WALTER A. The nickel iron chromium system. (*Rensselaer Polytechnic Inst., Eng. Sci. Series*, No. 26.) 1930.

DERRIEN, EUGÈNE. Zinc, porphyrines et cancer. (From the *Arch. Soc. Sci. Med. Biol. Montpellier*, 1929–30, **11**.)

DERRIEN, EUGÈNE, and CRISTOL, PAUL. Zincoporphyrinurie. (From the *Arch. Soc. Sci. Med. Biol. Montpellier*, 1929–30, **11**.)

EMPIRE MARKETING BOARD. May 1929 to May 1930, etc. London 1930 +.

EVANS, W. P. Microstructure of New Zealand lignites. (From the *New Zealand J. Sci. Tech.*, 1930, **11**.) ill.

GRAAF, HENDRIK DE. Verband tusschen smaak en constitutie van dicarbonzuur-dihydraziden en derivaten. Leiden 1930. pp. xii + 138.

HESS, WENDELL FREDERICK. A study of the colour sensitiveness of various types of photo-electric cells. (*Rensselaer Poly. Inst. Eng. Sci. Series*, No. 23.) Troy 1929. pp. 27. ill.

HIRAIDZUMI, TEIKICHI. Studies in menthones. (From the anniversary vol. dedicated to M. Chikashige, 1930.)

KOMATSU, SHIGERU. Biochemical studies on the bamboo. I. (From the anniversary vol. dedicated to M. Chikashige, 1930.)

KOSTING, PETER R. The nickel iron copper system. (*Rensselaer Polytechnic Inst., Eng. Sci. Series*, No. 26.) 1930.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 60. Flame-proof electrical apparatus for use in coal mines. Summarising report by IRA CECIL FRANK STATHAM and RICHARD VERNON WHEELER. London 1930. pp. iv + 62. ill.

MINISTRY OF HEALTH. The Public Health (Preservative, &c., in Food) Regulations. (*Statutory Rules and Orders*, 1925, No. 775, as amended by 1926, No. 1557, and 1927, No. 577.) pp. 11.

MONIER-WILLIAMS, GORDON WICKHAM. A report on the determination of sucrose, lactose and invert sugar in sweetened condensed milk. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 57.) London 1930. pp. 23.

MORTON, JAMES. Dyestuffs and textiles in Britain: 1930. [Edinburgh] 1930. pp. 43.

NISHIDA, KITSUJI, and HASHIMA, HIDEO. Chemische Untersuchungen ueber das Glukomannan aus "Konjak." (From the *J. Dept. Agric., Kyushu Imp. Univ.*, 1930, **2**.) ill.

OBINATA, ICHIJI. Studies on quenching velocities. (From the *Mem. Ryojun Coll. Eng.*, 1930, **2**.) ill.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 30th, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Ernest Owen Courtman	June 21st, 1900.	Oct. 20th.
Frank Edwin Dickinson	Dec. 3rd, 1925.	Oct. 27th.

D. J. Ives was formally admitted a Fellow of the Chemical Society.

Forms of recommendation for Fellowship were read for the first time in favour of:

Victor Gallafent, B.Sc., A.R.C.S., 164, Leander Road, Brixton, S.W. 2.
Eric Charles Edward Hunter, B.Sc., 56, Westover Road, Wandsworth, S.W. 18.
Harold John Moss, B.Sc., 181, Church Road, Willesden, N.W. 10.
William Frank Pavitt, A.I.C., 3, Bowerdean Street, Fulham, S.W. 6.
Reginald John William Reynolds, B.Sc., 114, King Street, Fenton, Stoke-on-Trent.
Maurice Stacey, B.Sc., Moreton, near Newport, Salop.

The following papers were read:

"Stereochemical influences on aromatic substitution. Substitution derivatives of 5-hydroxyhydrindene." By W. H. MILLS and I. G. NIXON.

"A general method for the preparation of thiocyanine dyes. Some simple thiocarbocyanines." By N. I. FISHER and F. M. HAMER.

"Syntheses with ββ′-dichlorodiethyl ether. Part II. Heterocyclic compounds containing two atoms of the oxygen group in the ring. 1 : 4-Selenoxan and its derivatives." By C. S. GIBSON and J. D. A. JOHNSON.

Ordinary Scientific Meeting, Thursday, November 20th, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	Died.
John Edward Purvis	June 20th, 1901.	Nov. 1st, 1930.
Fred Pilkington Sargeant	Feb. 15th, 1900.	May 20th, 1930.

The PRESIDENT announced that delegates would represent the Society for the year 1931 as follows :—

Professor C. S. Gibson, Mr. A. J. Greenaway, Dr. J. T. Hewitt, and Professor G. T. Morgan, together with the Treasurer (*ex officio*), on the Bureau of Chemical Abstracts.

Professor C. S. Gibson, Sir William J. Pope, and Professor J. F. Thorpe on the Federal Council for Chemistry.

Professor A. J. Allmand, Professor F. G. Donnan, and Professor J. Kendall on the Editorial Board of the *Journal of Physical Chemistry*.

Forms of Recommendation for Fellowship were read for the first time in favour of :—

Herbert William Ashton, B.Sc., 37, Caversham Avenue, Palmers Green, N. 13.
John Beach Fleuret, 47, Walsingham Road, Hove, Sussex.
Paul Edward Gagnon, B.A., D.-ès-Sc., Laval University, Quebec.
Herbert Victor Hoffman, B.Sc., 72, Wembley Park Drive, Wembley Park.
Harry Herman Kretchmar, B.Sc., 5, Smith Street, Perth, Western Australia.
Kuruvila Ittyerah Kuriyan, B.A., M.Sc., 112, Gower Street, W.C. 1.
Harold Leslie Langdon, B.Sc., Alleyn, Hopcott, Minehead, Somerset.
Arthur Reginald Lowe, B.Sc., A.R.C.S., 7, Kempsford Gardens, Earls Court, S.W. 5.
Roland Rusk McLaughlin, M.A.Sc., M.A., Ph.D., 4, May Street, Toronto.
Louis Frederic Mountfort, Claverings, Montagu Road, Edmonton, N. 9.
Thomas Henry Hall Quibell, B.A., 51, Maids Causeway, Cambridge.
William Frederick Sandrock, B.Sc., 61, Buxton Road, Chingford, Essex.
Arthur Leonard Silcox, B.Sc., Eastbourne, Langland Bay, Mumbles, Swansea.
James Clare Speakman, M.Sc., Ph.D., St. Aidan's Vicarage, Park, Sheffield.
James Walker, B.Sc., 3, Walker Place, Arbroath, Angus.
George Stafford Whitby, M.Sc., Ph.D., 226, Rideau Terrace, Ottawa, Ont., Canada.
James Matson Wright, B.Sc., c/o Mrs. Barnfather, 7, Kempsford Gardens, Earls Court, S.W. 5.

The following papers were read :—

"Piperitone. Part XI. Syntheses of optically inactive and active piperitylamines, piperitols, and α-phellandrenes." By J. READ and R. A. STOREY.

"Researches in the menthone series. Part IX. A new optical resolution of *dl*-menthol and of *dl*-camphor-10-sulphonic acid." By J. READ and W. J. GRUBB.

"Heterocyclic systems containing selenium. Part IV. *cyclo*-Selenohexane." By G. T. MORGAN and F. H. BURSTALL.

"Bis-*p*-phenetyl telluride and its derivatives." By G. T. MORGAN and F. H. BURSTALL.

"Researches on residual affinity and co-ordination. Part XXXII. Complex salts of bivalent silver." By G. T. MORGAN and F. H. BURSTALL.

THIRD LIVERSIDGE LECTURE.

The Third Liversidge Lecture, entitled "Fifty Years' Experimental Research upon the Influence of Steam on the Combustion of Carbonic Oxide (1880–1930)," will be delivered by Professor W. A. Bone, D.Sc., F.R.S. on Thursday, December 11th, 1930, at 5.30 p.m. in the main Chemical Lecture Theatre of the Imperial College of Science and Technology, S. Kensington, S.W. 7 (by courtesy of the Governors).

THE LIBRARY.

The Library will be closed for the Christmas Holidays from Tuesday, December 23rd, at 1 p.m., until Monday, December 29th, at 10 a.m.

ANNUAL REPORTS, VOL. XXVII.

The price of the Annual Reports for 1930, Vol. XXVII, will be 5*s*. 6*d*. to those Fellows who apply before December 31st, 1930.

Application should be made to the Assistant Secretary, and must be accompanied by a remittance.

List of Papers, or Abstracts thereof, received between October 23rd and November 20th, 1930. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Formation of sulphonium chlorides and of unsaturated substances by the action of water and of aqueous alcoholic potash on ββ′-dichlorodiethyl sulphide." By A. E. OXFORD.

"Note on the bromination of 4-nitro-α-methylnaphthalene and the preparation of some aryl methyl halides." By J. S. H. DAVIES and A. E. OXFORD.

"The action of acids and alkalis on textile fibres. Part I. The action of acids and alkalis on cotton." By J. C. VOGEL.

"The reactions of the dioxides of selenium and tellurium with the halogen acids." By T. W. PARKER and P. L. ROBINSON.

"Note on the action of nitrous acid on thiourea." By T. W. J. TAYLOR.

"The action of halogens on ethyldi-iodostibine. Antimony bromo-di-iodide." By R. E. D. CLARK.

"The polysulphides of barium and calcium." By P. L. ROBINSON and W. E. SCOTT.

"The formation of aromatic thiosulphonic acids from disulphides." By E. W. MCCLELLAND and L. A. WARREN.

"Syntheses of glucosides. Part VI. The preparation of β-glucosides of phenols." By A. ROBERTSON and R. B. WATERS.

"Reaction of *p*-anisidine and ethyl methylacetoacetate." By W. O. KERMACK and J. F. SMITH.

"The interaction of ammonium sulphite with certain polybromo-paraffins." By W. J. POPE and F. B. KIPPING.

"The action of molecular nitrogen on highly purified iron." By H. H. GRAY and M. B. THOMPSON.

"Properties of conjugated compounds. Part XI. Addition of hydrogen bromide to βγ- and αδ-dimethylbutadiene." By E. H. FARMER and F. C. B. MARSHALL.

"ω-Cyano-acylamines and their transformation to quinoline derivatives." By M. ISHAQ and J. N. RÂY.

"The dissociation pressures of the iron nitrides." By H. H. GRAY.

"The hydrolysis of acetamide." By T. W. J. TAYLOR.

"A study of the aliphatic ethers." By H. HENSTOCK.

"The action of substituted aromatic amines on camphoric anhydride. The rotatory power of some disubstituted camphoranilic acids." By M. SINGH and D. SINGH.

"Chlorination of *o*- and *p*-nitrotoluenes. 3 : 4 : 6-Trichloro-2-nitrotoluene and 2 : 6-dichloro-4-nitrotoluene." By L. F. LEVY and H. STEPHEN.

"A new method of reducing aromatic nitro-compounds." By (Miss) T. E. DE KIEWIET and H. STEPHEN.

"The preparation of 4-nitrophthalimide and some of its derivatives." By L. F. LEVY and H. STEPHEN.

"Note on the preparation of anhydrous chlorides." By H. STEPHEN.

"Note on 6-chloro-2-methylbenzoic acid and its conversion into 6-chloro-α-hydroxyphthalide." By L. F. LEVY and H. STEPHEN.

"The co-ordination compounds of oximes. Part II. Nickel and cobalt compounds of *o*-hydroxybenzaldoxime." By O. L. BRADY.

"Syntheses of glucosides. Part VII. The synthesis of 6-bromo-indican." By A. ROBERTSON and R. B. WATERS.

"The inhibition of chemical reactions. Part IV. The site of anti-oxygenic action. The oxidation of sodium sulphite." By K. C. BAILEY and (MISS) V. H. FFRENCH.

"The action of nitric acid on polycyclic indole derivatives. Part IX." By S. A. BRYANT and S. G. P. PLANT.

"New derivatives of pyrrole. Part I. The synthesis of 3-keto-4 : 5-dihydro-di-(1 : 2)-pyrrole, and of 8-keto-5 : 6 : 7 : 8-tetrahydropyrrocoline." By G. R. CLEMO and G. R. RAMAGE.

"The formation of kojic acid from sugars by *Aspergillus oryzæ*." By F. CHALLENGER, L. KLEIN, and T. K. WALKER.

"Reduction products of the hydroxyanthraquinones. Part XII." By G. F. ATTREE and A. G. PERKIN.

"Nitrogen tri-iodide." By H. W. CREMER and D. R. DUNCAN.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 4th, 1930.

ANGELL, FREDERICK GEORGE, 32, Pinner Road, Harrow, Middlesex. British. Chemist. B.Sc., 2nd Class Hons. in Chemistry, Birmingham, 1928. Undertook research on chemistry of co-ordination compounds, 1928–1930, under direction of Dr. W. Wardlaw. "Complex Bromides of Quinquevalent Molybdenum," *J.C.S.*, 1929, 2578. "A New Interpretation of the Isomerism amongst Co-ordination Compounds of Platinum," *ibid.*, 1930, 349. (*Signed by*) W. N. Haworth, Harry W. Webb, F. W. Pinkard, H. D. K. Drew, Wm. Wardlaw.

BALDWIN, ALFRED WILLIAM, 100, Cecile Park, Crouch End, N. 8. British. Organic Chemistry Research Student. B.Sc., 2nd Class Hons. Chemistry (London External). Private study. Ph.D. (London External), Manchester University and University College, London. Employed as assistant, B. D. C. Blackley, 1918–26. Post-graduate research on nitration of sulphones and antimalarial research, viz. preparation of aminoalkylamino-6-alkoxyquinolines. "Attempts to Find New Antimalarials," Part III, *J.C.S.*, 1929, 2959. (*Signed by*) R. Robinson, R. J. W. Le Fèvre, W. Bradley.

BATTEN, WILLIAM EDWARD, 41, Calais Gate, Myatts Park, S.E. 5. British. Research Student. Associate of the Royal College of Science. At present carrying out research in organic chemistry at Imperial College of Science and Technology. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, G. A. R. Kon, R. P. Linstead.

BEATTIE, WILLIAM ANDREW, 11, Fraser Grove, Wardie, Edinburgh. British. Chemist and Druggist. Member of the Pharmaceutical Society.

Laboratory Manager, Messrs. Duncan, Flockhart & Co., 104, Holyrood Road, Edinburgh. (*Signed by*) J. J. Blackie, Eric Knott, Gordon Perrins.

Beckett, Ernest George, Gilmerton, Larbert, Stirlingshire. British. Works Manager (Scottish Dyes, Ltd., Grangemouth). Dipl. Chem. (Zürich); Ph.D. (Zürich); F.I.C. Research on determination of antimony (thesis). "The Estimation of Nitrogen in Nitrocellulose and Inorganic Nitrates," *J.C.S.*, 1920, 220. (*Signed by*) John Read, W. D. Rogers, Wm. Rintoul, Wm. Barbour.

Black, Hugh Kenneth, 63, Middle Street, Brighton, Sussex. British. Technical Assistant. B.Sc., Special London. (*Signed by*) Allan Domleo, J. C. Everett, A. J. Butterworth.

Bloomfield, George Frederic, 27 Belmont Avenue, Tottenham, N. 17. British. Research Student, Organic Chemistry, Royal College of Science. B.Sc. (London); A.R.C.S. (1st Class Hons.). (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, E. H. Farmer.

Bradley, John, 25, Lamel Street, Hull Road, York. British. From Sept. 1, 1930, Science Master at Wallasey Grammar School. B.A., Cambridge (2nd Class Hons. Chemistry); B.Sc., London (1st Class Hons. Chemistry). (*Signed by*) Gordon Van Praagh, J. G. A. Griffiths, H. Worth.

Chakravarti, Dhirendra Nath, King Edward College, Amraoti (Berar), India. Hindu. Demonstrator in Chemistry. M.Sc. (Allahabad University), 1925. Three years' teaching experience. Published papers: (1) "Fluorescence and Chemical Change," *Zeit. anorg. Chem.*, 1925, **142**, 299; (2) "Viscosity of Some Sols in Presence of Potassium Chloride," *ibid.*, 1926, **152**, 393; (3) "Formation of Gels of Vanadium Pentoxide and Stannic Hydroxide Sol," *ibid.*, 1926, **152**, 399; (4) "Viscosity and Gel Formation of Ceric Hydroxide Sol," *ibid.*, 1927, **164**, 63; (5) "Change of Viscosity and Electrical Conductivity of Sols on Ageing and the Formation of Gels of Inorganic Substances," *ibid.*, 1927, **168**, 209; (6) "Ageing Phenomena in Viscosity and Conductivity of some Sols and Electrolytes," *Koll. Zeit.*, 1927, **42**, 120; (7) "Viscosity of some Hydrophobic Sols and the Effect of Addition of Electrolytes," *ibid.*, 1927, **42**, 124; (8) "Viscosity of Colloids in Presence of Electrolytes," *ibid.*, 1928, **44**, 225; (9) "Viscosity Measurements of some Sols in Presence of Electrolytes," *Jour. Phys. Chem.*, 1926, **30**, 1646; (10) "Adsorption of Ions by Sols of Aluminium Hydroxide and Vanadium Pentoxide Sol," *Journ. Ind. Chem. Soc.*, 1928, **5**, 539. (*Signed by*) N. R. Dhar, S. N. Godbole, R. N. Kayasth.

Chandra, Monmohan, Senior Master, Government High School, Ma-ubin, Lower Burma. Bengalee. B.Sc., with distinction, of Calcutta University. Higher Grade Teachers' Certificate from Burma. 1. "A Knowledge of Chemistry for Housewives useful in Domestic Affairs" (in Bengali, not yet published). 2. "An Improved Method of Extracting Petroleum from Crude Oil" (not yet published). 3. Late Assistant Chemist of the British Burma Petroleum Company, Burma. (*Signed by*) G. C. Moitra, J. R. Sanyal, Maung Ba San.

Clapham, Frederick Charles, 90, The Portway, West Ham, E. 15. British. Accountant (Public Practice). Desire to receive publications, attend meetings, and use library. (*Signed by*) Evan D. Griffiths, T. S. Moore, C. S. Gibson.

Cox, Ernest Gordon, 352, Shirley Road, Acocks Green, Birmingham. British. Assistant Lecturer in Chemistry. B.Sc. (Bristol). Assistant to the Professor of Chemistry, Royal Institution, 1927–29. Assistant Lecturer

in Chemistry, University of Birmingham, 1929 to date. (*Signed by*) W. N. Haworth, S. R. Carter, Wm. Wardlaw, F. W. Pinkard.

CROWTHER, HAROLD ALBERT HADLEIGH, "Claremont," Cedar Road, Croydon, Surrey. English. Manufacturing Chemist. Student, College of Pharmacy of Wales. Chief Chemist, E. C. De Witt & Co., Ltd. Chief Chemist, Di-Miska Laboratories (Warren Pharmacal Co., Ltd.). (*Signed by*) F. C. Dyche-Teague, Ernest A. Rudge, Harold Heron.

FOX, ARTHUR LAWRENCE, 1103, Blackshire Road, Wilmington, Delaware, United States. American. Chemist. B.A., M.S. University of Illinois, 1923; Ph.D., North-western University, 1927. *J. Amer. Chem. Soc.*, **51**, 3363. Chemist in Dyestuff Research, Du Pont Company. (*Signed by*) James Craik, Leon Rubenstein, F. D. Miles.

FREUNDLICH, HERBERT, Enzianstrasse 3, Berlin—Lichterfelde. German. Member of the Kaiser Wilhelm Institute for Physical and Electrochemistry. University Professor. Ph.D. (Leipzig). Author of "Kapillarchemie." Liversidge Lecture, 1929. (*Signed by*) Jocelyn Thorpe, F. G. Donnan, T. Slater Price, George Barger, T. S. Moore, C. S. Gibson.

GALLAFENT, VICTOR, 164, Leander Road, Brixton, S.W. 2. English. Student. B.Sc., A.R.C.S. (Royal College of Science, London). (*Signed by*) H. F. Harwood, H. L. Riley, James C. Philip.

GIDVANI, BHAWAN SHOWKIRAM, c/o American Express Co., 6, Haymarket, S.W. 1. Indian (British subject). Student. B.Sc. in Chemistry and Physics of the Bombay University. Research work on complex nitrites of potassium and lead for one year under Dr. A. N. Meldrum, and now a research student in organic chemistry at the Imperial College of Science and Technology under Prof. J. F. Thorpe. (*Signed by*) G. A. R. Kon, Arnold Stevenson, R. P. Linstead.

GLASSMAN, JOSEPH, 108, Goldsmith's Row, Hackney, E. 2. English. Research Student in Physical Chemistry. 1st Class Hons., B.Sc., London. (*Signed by*) J. R. Partington, W. H. Patterson, D. C. Jones, R. J. Winterton.

GOEPP, RUDOLPH MAXIMILIAN, jun., Queen's College, Oxford, England. American. Student. B.S. in Chemistry, Lehigh University, Bethlehem, Pa., U.S.A. Rhodes Scholar. (*Signed by*) F. D. Chattaway, G. D. Parkes, S. G. P. Plant, D. Ll. Hammick.

GOW, EVELYN REID LINDSAY, 31, Windsor Street, Dundee. British. Carnegie Research Scholar. B.Sc. (St. Andrews) with Hons. of 1st Class in Chemistry. (*Signed by*) Alex. McKenzie, Isobel A. Smith, Pat D. Ritchie, Agnes G. Mitchell.

HAMBLY, ARTHUR NEVILLE, 15, Moubray Street, Albert Park, S.C. 6, Melbourne, Australia. British. Student. Undergraduate. Student doing final year for B.Sc. Honours in chemistry in training for teaching of chemistry. (*Signed by*) E. J. Hartung, W. Davies, K. N. Welch, W. J. Young.

HAMPSHIRE, FREDERICK WILLIAM, Overstrand Lodge, Overstrand, Norfolk. British. Managing Director of F. W. Hampshire & Co., Ltd., Manufacturing Chemists, Derby. The applicant has built up the business of F. W. H. & Co., Ltd., from its inception, and has until recently been in charge of the experimental and research work in connection with our business. (*Signed by*) Howard A. Costigan, W. W. Reed, John W. Corran, George P. Forrester.

HARRIS, THOMAS LANE, 5, Hawthorne Road, King's Norton, Birmingham. British. Research Chemist. B.Sc., 1st Class Hons. (Birmingham). Re-

search student at Birmingham University. (*Signed by*) Chas. E. Wood, H. D. K. Drew, E. L. Hirst, W. N. Haworth.

HARRY, RALPH GORDON, 183, Cathedral Road, Cardiff. British. Student. I have qualified as a Student-member of the Institute of Chemistry, and am studying for my F.I.C. I have spent two years at the Technical College and obtained my First Year Joint Diploma in Chemistry, and since then have spent a year in practical work at the Cardiff Laboratories under the City and County Analysts. (*Signed by*) Ernest A. Rudge, H. B. Watson, Thomas Graham.

HEALEY, MARGARET MARY, 79, Pope's Avenue, Twickenham. British. Chemistry Research Student. B.Sc., Special, London. (*Signed by*) C. K. Ingold, A. M. Robinson, R. J. W. Le Fèvre.

HICKS, ROBERT HAXWELL, 65, Romilly Road, Cardiff. British. Analytical Chemist. Inter. B.Sc. (Wales); B.Sc. (Wales) with the exception of one subject (physics). Three and a half years as a student in the University College of South Wales and Monmouthshire. Seven years' experience as an Analytical Chemist with Messrs. Treharne and Duncan, Analytical and Consulting Chemists, 125, Bute Street, Cardiff. (*Signed by*) J. H. Duncan, W. J. Jones, W. Cule Davies, S. T. Bowden.

HILL, DOUGLAS WILLIAM, 33, Dunlop Avenue, Lenton, Nottingham. British. Research Chemist. B.Sc. (Bristol); Ph.D. (Liverpool). Assistant to Professor Heilbron, D.S.O., Liverpool University, 1926–27. Research chemist to Messrs. Boots Pure Drug Co., Ltd., 1927–present. *J.C.S.*, 1927, 1705, 2005; 1928, 993; 1929, 2236. (*Signed by*) Frank Lee Pyman, Reginald Child, Reginald C. Fawcett.

HOSE, CYRIL GUSTAV BIDWELL, 36, Vartry Road, Stamford Hill, N. 15. British. Student. A.R.C.S. (London). Student engaged in research work in organic chemistry at Royal College of Science. (*Signed by*) E. H. Farmer, M. A. Whiteley, H. J. T. Ellingham.

HUNTER, ERIC CHARLES EDWARD, 28, Alfred Street, Swindon, Wilts. English. Research Student. B.Sc. (1st Class) Chemistry, London. I wish to attend the meetings of the Society and to contribute papers to the Journal concerning my research work. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson, R. J. Winterton.

JEFFERY, GEORGE HAROLD, "Redbourne," Lordswood Avenue, Bassett, Southampton. English. Demonstrator, Chemistry Department, University College, Southampton. B.Sc. (Special) (London). Research student. (*Signed by*) D. R. Boyd, A. I. Vogel, H. H. Hatt.

KOBAYASHI, MATSUSUKE, Chemical Institute, Faculty of Science, Tohoku Imperial University, Sendai, Japan. Japanese. Professor of Analytical Chemistry. D.Sc. (Sendai). Sakurai medallist of 1928, Chemical Society of Japan. Author and joint author (with F. A. Gooch and G. P. Baxter) of papers published in *J. Chem. Soc. Japan*, *Amer. Journ. of Science*, and *J. Amer. Chem. Soc.* (*Signed by*) Riko Majima, Hiroshi Nomura, Sin-iti Kawai.

LETCH, RALPH ARTHUR, Ebenezer Cottage, Shenley, near Barnet, Herts. English. Research Student. A.R.C.S. (Lond.). Engaged in research in organic chemistry at the Imperial College, London. (*Signed by*) R. P. Linstead, M. A. Whiteley, H. L. Riley.

MCKAY, WILLIAM BYRES, 20, Dundee Road, Forfar, Angus. Scottish. Carnegie Research Scholar. B.Sc. (St. Andrews) with Hons. of the 1st Class in Chemistry. (*Signed by*) Alex. McKenzie, John Foggie, John D. M. Ross.

MACLENNAN, GEORGE WILLIAM GRANT, 9, Park Walk, Chelsea, S.W. 10. British. Student in Chemistry (Research). M.A., Aberdeen, 1926; B.Sc. with 1st Class Hons. in Chemistry, Aberdeen, 1929. Research experience in physical chemistry at Aberdeen, 1929–30. Subject: "Iodine Ion Concentration in Acetone–Water Mixtures." (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, Arnold Stevenson.

MACNIVEN, JOHN, Lohat P.O., District Darbhanga, B. & N.W. Rly., India. British. Chemist and Sugar Technologist. Studied chemistry, fuels and their application, bacteriology and sugar manufacture at the Royal Technical College. City and Guilds of London Technological Diploma in Sugar Technology. (*Signed by*) Thomas Gray, F. J. Wilson, W. M. Cumming.

MACWALTER, ROY JAMES, "Anglesea," Maple Road, Ashtead, Surrey. British. Research in Chemistry. B.Sc., University College, London (1st Class Hons. Chemistry). Research student in chemistry at University College, London. (*Signed by*) S. Barratt, H. de Laszlo, Henry Terrey.

MALHOTRA, KISHEN LAL, 52, Claremont Road, Highgate, N. 6. Aryan. Lecturer in Chemistry, Government College, Lahore. M.Sc. (Physics); M.Sc. (Chemistry), Panjab (India). Author of: (1) "Determination of Free Mercury in Commercial Products," *The Analyst*, June 1927; (2) "Solubility of Mercuric Bromide in Ethyl and Methyl Alcohols," *J. Ind. Chem. Soc.*, 1928; (3) "Action of Substituted Aromatic Amines on Camphoric Anhydride, etc.," *J.C.S.*, Sept. 1928; (4) "Action of Bromine on Strontium Oxide and its Hydrates," *ibid.*, Dec. 1928. (Joint author of (2), (3), and (4).) (*Signed by*) C. K. Ingold, C. F. Goodeve, F. G. Donnan.

MOSS, HAROLD JOHN, 181, Church Road, Willesden, N.W. 10. English. Student. B.Sc. (Hons. Chemistry, London). Research student in physical chemistry at East London College. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson.

NOBLE, ERNEST GILBERT, 22, Dartmouth Park Road, Highgate Road, N.W. 5. British. Research Student. A.R.C.S. (Lond.). At present engaged in research in organic chemistry at the Imperial College. (*Signed by*) G. A. R. Kon, M. A. Whiteley, R. P. Linstead.

PARRY, THOMAS JOHN VERNON, 349, Buxton Road, Great Moor, Stockport. British. Chemist. Member Pharmaceutical Society, London; M.I.C.O., London. Now Managing Director of Phenyldent Proprietaries, Ltd., Manufacturing Chemists. Founder and inventor of Phenyldent Antiseptics. On research at present on digitalis, re chemical standardisation and stability. Desiring to be elected a Fellow, to get in touch with present-day researches, which I am convinced would be a great asset to my own analysis. (*Signed by*) Perry Barrs, John J. Laws, Harry Lucas.

PAVITT, WILLIAM FRANK, 3, Bowerdean Street, Fulham, S.W. 6. English. Works Chemist, Burgoyne, Burbidges & Co., Ltd. A.I.C. (London). Engaged in manufacture of fine organic chemicals. (*Signed by*) J. N. E. Day, O. L. Brady, Henry Terrey.

REYNOLDS, REGINALD JOHN WILLIAM, 114, King Street, Fenton, Stoke-on-Trent. British. Research Student. Hons. B.Sc. (Birmingham). I desire to keep in touch with present-day developments in chemistry. Technical Assistant and Micro. Analyst, Chemical Department, University of Birmingham. (*Signed by*) W. N. Haworth, E. L. Hirst, Allan C. Waine.

RHODES, CLIFFORD ARTHUR, Dorcliffe, 38, Granny Lane, Mirfield, Yorkshire. British. Assistant Chemist on Manufacturing Staff of British Dye-

stuffs Corporation, Ltd. B.Sc. (Special Chemistry Ext.), University of London, 1930. Teacher of Chemistry, Batley Technical College (Evening Course). Engaged in the manufacture of dyestuffs and dyestuffs intermediates since 1920. (*Signed by*) F. W. Richardson, James C. Harral, James Bruce.

ROBINSON, ANTHONY MELLAND, The Châlet, Lindfield, Sussex. British. Works Chemist. B.A., Cambridge. 2nd Class in Chemistry in Part II Natural Sciences Tripos, 1930. Wishing to keep in touch with modern advances in chemistry. (*Signed by*) W. H. Mills, Eric K. Rideal, F. G. Mann.

SHAH, CHANDULAL CHHOTALAL, East London College, Mile End Road, E. 1. British. Research Chemist. B.Sc. (1st Class Hons. Chemistry, Bombay, 1926); M.Sc. (Bombay), 1929. Demonstrator in Chemistry, Baroda College, India. (*Signed by*) J. R. Partington, N. L. Anfilogoff, D. C. Jones.

SNOW, CHRISTINE MARY, Somerville College, Oxford. British. Research Fellow of Somerville College. B.A. in the Honours School of Natural Science, and B.Sc., Oxford. For library facilities and to receive publications. (*Signed by*) F. D. Chattaway, G. D. Parkes, Frederick M. Brewer.

STACEY, MAURICE, Moreton, near Newport, Shropshire. British. Research Student. B.Sc. (Hons.), Birmingham. Research Student and Demonstrator, Chemistry Department, University of Birmingham. I desire to keep in touch with present-day developments in chemistry. (*Signed by*) W. N. Haworth, E. L. Hirst, S. W. Challinor.

STAFFORD, GEORGE BASIL, 12, The Grove, Southey Street, Nottingham. British. The Sandoz Chemical Co. B.Sc., 1st Class Hons., London University. Manager of Springfield Starch Works, Nottingham. (*Signed by*) F. S. Kipping, E. B. R. Prideaux, J. B. Firth.

TROTTER, JOHN FREDERICK FELIX, 83, Mildred Avenue, Watford, Herts. English. Research Student. A.R.C.S., B.Sc. (London). Engaged in research at the Royal College of Science. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, R. P. Linstead.

WALDRON, EVELYN MARIE, The Cedars, Little Marlow Road, Marlow, Bucks. British. Chemistry Research Student. B.Sc., Special, London. (*Signed by*) C. K. Ingold, A. M. Robinson, R. J. W. Le Fèvre.

WATSON, ERIC MERVYN, 144, Sinclair Road, Kensington, W. 14 (postal address: c/o Agent-General for Western Australia, Savoy House, Strand). British. Post-graduate Student. B.Sc. (Hons.), University of Western Australia; A.I.C. Lecturer in Chemistry in the University of Adelaide, University of Western Australia and Perth Technical College. (*Signed by*) N. T. M. Wilsmore, Edward S. Simpson, G. A. R. Kon.

WILLIAMS, EVAN CLIFFORD, 131, Alvarado Road, Berkeley, California, U.S.A. British. Director of Research. M.Sc., Manchester; D.Sc., London. Ramsay Professor of Chemical Engineering, University of London. Director of the Shell Development Company. (*Signed by*) James W. McBain, C. S. Gibson, T. S. Moore.

YOUNG, PATRICK CHISHOLM, c/o Messrs. John Heathcoat & Co., Tiverton, Devon. British. Industrial Research Chemist. B.A., Cambridge. Part I, Modern Languages Tripos; Part II, Natural Sciences Tripos. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal.

The following Forms of Recommendation for Fellowship have

been authorised by the Council for presentation to ballot under Bye-Law I (2):

CHRISTIE, JOHN, 174, Eighth Avenue, Mayfair, Johannesburg, South Africa. British. Chemist and Druggist. President of South African Pharmacy Board. Desire to receive the publications of the Society. (*Signed by*) George P. Forrester, W. Leslie Dixon.

FAWCETT, JOSEPH SPENCER, 186, Oxford Terrace, Christchurch, New Zealand. Briton. Manager, Steele Chemical Proprietary, Ltd. Eight years' teaching, Marlborough, Otago, and Auckland. Actively associated industrially. (*Signed by*) H. G. Denham, J. Packer.

HINDE, HAROLD, 135, Grey Street (P.O. Box 792), Bulawayo, Rhodesia, S.A. British. Chief Chemist, Rhodesia Railways. Chemist and Druggist (Great Britain); M.P.S. (Great Britain, 1920); M.P.S. (Rhodesia). I was in charge of Wholesale and Manufacturing Department of Wilson and Kitchins, Whitehaven, 1913–14. I have been Chemist to Rhodesia Railways since 1920. (*Signed by*) Max Rubin, N. F. Lovasz.

SULLIVAN, JOSEPH JOHN, S.J., Boston College, Chestnut Hill, Mass., U.S.A. American. Professor of Chemistry. A.B., M.A. [Woodstock (M.D.)]; Ph.D. (Johns Hopkins). (*Signed by*) W. A. Patrick.

WHITEFORD, GILBERT HAYES, 1612 S. College, Fort Collins, Colorado, U.S.A. United States. Head Department of Chemistry, Colorado Agric. College. B.S. Md. Agric. College; A.M., Columbia; Ph.D., Johns Hopkins; Professor of Chemistry, Albright College, Myerstown, Pa., 1911–15; Scholarship Johns Hopkins University, 1915–17; Associate Professor of Chemistry, Colorado Agric. College, 1917–18; Professor and Head of Department, 1918-present. (*Signed by*) G. Wakeham.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 2, II Hälfte, Heft vii. Berlin 1930. pp. 2879 to 2970. *M.* 5. (*Recd.* 24/10/30.) From the Publishers: Herren Urban & Schwarzenberg.

BILLITER, JEAN. Die neueren Fortschritte der technischen Elektrolyse. (Ergänzungsband zum I, II, und III Teil der "Technischen Elektrochemie.") Halle (Saale) 1930. pp. viii + 328. ill. *M.* 20. (*Recd.* 1/11/30.)

From the Publisher: Herr Wilhelm Knapp.

BRIGGS, WILLIAM, and BAUSOR, HAROLD WILLIAM. Elementary quantitative analysis. 2nd edition. Revised by DOUGLAS ROSEBERY SNELLGROVE. London 1930. pp. viii + 125. ill. 3*s.* net. (*Recd.* 3/11/30.) From the Publishers: University Tutorial Press.

CARLOS, ARTHUR SIDNEY. Feeding stuffs. London 1928. pp. xii + 152. ill. 5*s.* net. (*Recd.* 23/10/30.) From the Author.

FORTSCHRITTE DER CHEMIE, PHYSIK UND PHYSIKALISCHEN CHEMIE. Neue Folge des Physikalisch-chemischen Centralblattes. Vols. I–VI. Leipzig 1909–13. (*Reference.*)

—— Generalregister. Vols. I–V. (1909–12). Leipzig 1912. (*Reference.*) From Dr. T. Slater Price, O.B.E., F.R.S.

FRÉCHET, M., and ROMANN, R. Représentation des lois empiriques par des formules approchées à l'usage des chimistes, des physiciens, des ingénieurs et des statisticiens. Paris 1930. pp. viii + 302. 35 *fr.* (*Recd.* 13/11/30.)

From the Publishers: Librairie de l'Enseignement Technique.

GWOSDZ, JOSEF. Kohlenwassergas. Entwicklung, Durchführung und Ziele der restlosen Vergasung unserer Brennstoffe auf der Grundlage des Wassergasprozesses. Halle (Saale) 1930. pp. viii + 203. ill. *M.* 18. (*Recd.* 4/11/30.)

From Mr. H. M. Spiers.

KAUSCH, OSCAR. Der Graphit. Halle (Saale) 1930. pp. viii + 247. ill. *M.* 25. (*Recd.* 4/11/30.) From Mr. H. M. Spiers.

PARSONS, THOMAS RICHARD. The materials of life. A simple presentation of the science of biochemistry. London 1930. pp. 288. ill. 10*s.* 6*d.* net. (*Recd.* 24/10/30.)

From the Publishers: Messrs. George Routledge & Sons.

PHYSICAL SOCIETY and OPTICAL SOCIETY. Photo-electric cells and their applications. A discussion at a joint meeting. London 1930. pp. 236. ill. 12*s.* 6*d.* net. (*Recd.* 7/11/30.)

From the Societies.

ROSENTHALER, LEOPOLD. The chemical investigation of plants. Authorised translation of the 3rd German edition. By SUDHAMOY GHOSH. (Monographs on Modern Chemistry.) London 1930. pp. viii + 197. ill. 12*s.* 6*d.* net. (*Recd.* 17/11/40.)

From the Publishers: Messrs. G. Bell & Sons.

SOCIÉTÉ FRANÇAISE DE PHOTOGRAPHIE. Bulletin. 3rd series. Vol. XIV, etc. Paris 1927 +. (*Reference.*)

From Dr. T. Slater Price, O.B.E., F.R.S.

WEISS, MAX. Das Trocknen der Kohle. Halle (Saale) 1930. pp. viii + 196. ill. *M.* 15. (*Recd.* 4/11/30.)

From Mr. H. M. Spiers.

II. *By Purchase.*

BARKER, THOMAS VIPOND. The study of crystals: a general introduction. London 1930. pp. xvi + 137. ill. 8*s.* 6*d.* net. (*Recd.* 20/11/30.)

BARNARD, GEORGE P. The selenium cell, its properties and applications. London 1930. pp. xxx + 331. ill. 35*s.* net. (*Recd.* 20/11/30.)

BERTELSMANN, WILHELM, and SCHUSTER, FRITZ. Einführung in die technische Behandlung gasförmiger Stoffe. Berlin 1930. pp. x + 411. ill. *M.* 40. (*Recd.* 11/11/30.)

BILTZ, HEINRICH, and BILTZ, WILHELM. Ausführung quantitativer Analysen. Leipzig 1930. pp. xvi + 402. ill. *M.* 20. (*Recd.* 11/11/30.)

BRÜCKNER, HORST. Katalytische Reaktionen in der organisch-chemischen Industrie. I. Dresden 1930. pp. viii + 168. ill. *M.* 16. (*Recd.* 11/11/30.)

CHEMICAL CATALOG COMPANY. The condensed chemical dictionary. 2nd edition. New York 1930. pp. 550. (*Reference.*) 42*s.* net.

CLERC, L. P. Photography, theory and practice: being an English edition of "La technique photographique." Edited by GEORGE EDWARD BROWN. London 1930. pp. xvi + 566. ill. 35*s.* net. (*Recd.* 20/11/30.)

CRAVERI, CALISTO. Les essences naturelles: extraction-caractères-emplois. Translated by HENRI TATU. Paris 1929. pp. xii + 602. ill. 70 *fr.* (*Recd.* 28/10/30.)

DEMING, HORACE G. In the realm of carbon. The story of organic chemistry. New York 1930. pp. x + 365. ill. 15*s.* net. (*Recd.* 20/11/30.)

DURVELLE, J. P. Fabrication des essences et des parfums. Chimie des parfums. 3rd edition. Paris 1930. pp. viii + 808. ill. 135 *fr.* (*Recd.* 30/10/30.)

EULER, HANS VON. Biokatalysatoren. (Sammlung, New Series, Vol. I.) Stuttgart 1930. pp. 68. (*Reference.*)

EVANS, CHARLES [ARTHUR] LOVATT. Recent advances in physiology. 4th edition. London 1930. pp. xii + 446. ill. 12*s.* 6*d.* net. (*Recd.* 20/10/30.)

FERCHL, FRITZ. Von Libau bis Liebig. Chemikerköpfe und -Laboratorien. Mittenwald (Bayern) [1930]. pp. [94]. ill. *M.* 7. (*Recd.* 11/11/30.)

FINDLAY, ALEXANDER. The spirit of chemistry: an introduction to chemistry for students of the liberal arts. London 1930. pp. xvi + 480. ill. 10*s.* 6*d.* net. (*Recd.* 20/10/30.)

FINDLAY, GEORGE MARSHALL. Recent advances in chemotherapy. London 1930. pp. viii + 532. ill. 15*s.* net. (*Recd.* 20/11/30.)

FREUNDLICH, HERBERT. Kapillarchemie. 4th edition. In collaboration with J. BIKERMAN. Vol. I. Leipzig 1930. pp. viii + 566. ill. *M.* 39. (*Recd.* 11/11/30.)

GOSSELIN, ALBERT, and GOSSELIN, MARCEL. Constitution et thermochimie des molécules. Paris 1930. pp. viii + 231. ill. 40 *fr.* (*Recd.* 28/10/30.)

GRANT, JULIUS. The measurement of hydrogen-ion concentration. London 1930. pp. viii + 159. ill. 9*s*. net. (*Recd.* 20/10/30.)

HARRISON, GEOFFREY ARTHUR. Chemical methods in clinical medicine. London 1930. pp. x + 534. ill. 18*s*. net. (*Recd.* 20/11/30.)

HENRICI, ARTHUR T. Molds, yeasts, and Actinomycetes. New York 1930. pp. x + 296. ill. 17*s*. 6*d*. net. (*Recd.* 20/11/30.)

JOHNSON, CHARLES MORRIS. Rapid methods for the chemical analysis of special steels, steel-making alloys, their ores, graphites, and bearing metals. New York 1930. pp. xx + 729. ill. 37*s*. 6*d*. net. (*Recd.* 20/10/30.)

KIND, W. [and others]. Der Flachs. Part I. Berlin 1930. pp. x + 427. ill. *M*. 54. (*Recd.* 11/11/30.)

KIRCHNER, JULIUS. Die Sodafabrikation nach dem Solvay-Verfahren. Leipzig 1930. pp. xii + 123. ill. *M*. 10.50. (*Recd.* 11/11/30.)

METZGER, HÉLÈNE. Newton, Stahl, Boerhaave et la doctrine chimique. Paris 1930. pp. vi + 332. 40 *fr*. (*Recd.* 28/10/30.)

MEYERHOF, OTTO. Die chemischen Vorgänge im Muskel und ihr Zusammenhang mit Arbeitsleistung und Wärmebildung. Berlin 1930. pp. xiv + 350. ill. *M*. 29.80. (*Recd.* 11/11/30.)

MITCHELL, CHARLES AINSWORTH. [Editor.] Recent advances in analytical chemistry. Vol. I. London 1930. pp. x + 421. ill. 12*s*. 6*d*. net. (*Recd.* 20/10/30.)

NONNENMACHER, E. Die Jute. Part I. Berlin 1930. pp. viii + 571. ill. *M*. 86. (*Recd.* 11/11/30.)

RUPE, HANS. Anleitung zum Experimentieren in der Vorlesung über organische Chemie. 2nd edition. Berlin 1930. pp. viii + 177. ill. *M*. 14. (*Recd.* 11/11/30.)

SMITHELLS, COLIN JAMES. Impurities in metals, their influence on structure and properties. 2nd edition. London 1930. pp. xiv + 190. ill. 18*s*. net. (*Recd.* 20/11/30.)

STEWART, ALFRED WALTER. Recent advances in physical and inorganic chemistry. 6th edition. London 1930. pp. xii + 387. ill. 18*s*. net. (*Recd.* 20/11/30.)

TATE, FRANCIS GEORGE HENRY: Alcoholometry: an account of the British method of alcoholic strength determination. With an historical introduction written in collaboration with GEORGE HUGH GABB. London 1930. pp. xviii + 93. ill. 5*s*. net. (*Recd.* 20/10/30.)

THOM, CHARLES. The Penicillia. [Baltimore, Md.] 1930. pp. xiv + 644. ill. 45*s*. net. (*Recd.* 20/11/30.)

[United States] National Research Council. A report of the Committee on the construction and equipment of chemical laboratories. New York 1930. pp. xiv + 340. ill. 5*s.* net. (*Recd.* 8/11/30.)

Wittig, Georg. Stereochemie. Leipzig 1930. pp. xii + 388. ill. *M.* 25. (*Recd.* 11/11/30.)

Zerr, Georg, and Rübencamp, R. Handbuch der Farbenfabrikation. 4th edition. Berlin [1930]. pp. xvi + 962. ill. *M.* 45. (*Recd.* 11/11/30.)

III. *Pamphlets presented by Dr. T. Slater Price, O.B.E., F.R.S.*

Denning, Arthur du Pré. Ueber die Viskosität und die magnetische Doppelbrechung des colloidalen Eisenoxyhydrates. Heidelberg 1904. pp. 38. ill.

Farmer, Robert Crosbie. Über sogenannte Oxyazokörper sowie Chinonoxime und Ketoxime. Würzburg 1899. pp. 71.

Goodwin, Harry Manley, and Kalmus, Herbert T. On the latent heat of fusion and the specific heat of salts in the solid and liquid state. (From the *Phys. Rev.*, 1909, 28.)

Goodwin, Harry Manley, and Mailey, R. D. On the density, electrical conductivity and viscosity of fused salts and their mixtures. (From the *Phys. Rev.*, 1907–8, 25–26.)

Hulett, George Augustus. Mercurous sulphate and the standard cells. (From the *Phys. Rev.*, 1906, 22.)

—— The cadmium standard cell. (From the *Phys. Rev.*, 1906, 23.)

—— Mercurous sulphate, cadmium sulphate and the cadmium cell. (From the *Phys. Rev.*, 1907, 25.)

—— A standard battery. (From the *Phys. Rev.*, 1908, 27.)

—— Equilibria in standard cells. (From the *Phys. Rev.*, 1908, 27.)

—— The cathode equilibrium in the Weston standard cell. (From the *Phys. Rev.*, 1910, 30.)

—— The construction of standard cells and a constant temperature bath. (From the *Phys. Rev.*, 1911, 32.)

—— The distillation of amalgams and the purification of mercury. (From the *Phys. Rev.*, 1911, 33.)

Hulett, George Augustus, and Carhart, Henry Smith. A study of the materials used in standard cells and their preparation. St. Louis 1904. pp. 19. ill.

Hulett, George Augustus, and Minchin, Howard D. The distillation of amalgams and the purification of mercury. (From the *Phys. Rev.*, 1905, 21.)

LEHMANN, ADOLF [LUDWIG FERDINAND]. Das Diphenyldibenzoyl-crotonylen und einige seiner Reduktionsprodukte. Leipzig 1897. pp. 39.

LEWIS, GILBERT NEWTON. Outlines of a new system of thermodynamic chemistry. (From the *Proc. American Acad. Arts Sci.*, 1907, **43**.)

LLOYD, JOHN ALEXANDER. Nitraniline und Nitrosoaniline als Pseudobasen. Würzburg 1903. pp. 67.

ROBERTSON, GEORGE. Ueber die Verseifungs- und Reduktionsprodukte des Phenyldibenzoylglutarsäurediäthylesters. Leipzig 1899. pp. 39.

SAND, HENRY JULIUS SALOMON. Zur Kenntnis von Alphylnitrosokörpern. Zürich 1898. pp. 78.

SMITH, LONGFIELD. Über einige Derivate des α-Methyl-β-ketopentamethenylens (Looft's Keton). Leipzig 1898. pp. 27.

IV. *Miscellaneous Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 45. A soil survey of the Woorinen settlement, Swan Hill irrigation district, Victoria. By J. K. TAYLOR and F. PENMAN. Melbourne 1930. pp. 41. ill.

BERKHOUT, P. J. TEDING VAN. Determination of rest-nitrogen in the blood of inhabitants of the tropics. (From the *Med. Dienst Volksgezondheid Ned.-Indie*, 1930.) ill.

BRADFORD, CITY OF. Conditioning house. [Regulations. 13th edition.] Bradford 1930. pp. iv + 80. ill.

MONIER-WILLIAMS, GORDON WICKHAM. The effect on foods of fumigation with hydrogen cyanide. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 60.) London 1930. pp. 32.

OBINATA, ICHIJI. On the nature of eutectoid-transformation of aluminium-bronze. Part II. Effect of quenching velocity. (From the *Mem. Ryojun Coll. Eng.*, 1930, **3**.) ill.

PENFOLD, ARTHUR RAMON. Eucalyptus, the essence of Australia. Sydney 1930. pp. 8. ill.

SCHREINEMACHERS, HENDRIK HUBERT. Reactiesnelheden van 1.chloor (broom) 2.4.dinitrobenzol met aminen. Leiden 1930. pp. xii + 123.

SCHUETTE, H. A., and THOMAS, RALPH W. The composition of the fat of the silver black fox. (From the *Trans. Wisconsin Acad. Sci.*, 1930, **25**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of. *Building Research.* Bulletin No. 7. Hot cement. By N. DAVEY. London 1930. pp. iv + 9. ill.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, December 4th, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
John Foggie	Dec. 5th, 1889.	Nov. 29th.
Edward William Voelcker	Feb. 21st, 1884.	Nov. 22nd.
William Ernest Wild	June 16th, 1898.	

Forms of Recommendation for Fellowship were read for the first time in favour of:

Maurice Brent, B.Sc., A.R.C.S., Frogmore, The Drive, Wembley Park.
Geoffrey Frank Carter, B.Sc., A.R.C.S., Ib, Broadlands Road, Highgate, N. 6.
Mahendra Harilal Desai, B.Sc., 24, Queensborough Terrace, Bayswater, W. 2.
Thomas William Evans, 2, Ellesmere Road, Pemberton, Wigan.
Ivy Kathleen Faith, B.Sc., Bush Lodge, Southgate, N. 14.
John Albert Charles Flohren, B.Sc., 8, Conway Road, N. 15.
Ernest William Lambert, B.A., 264, Ardgowan Road, Catford, S.E. 6.
Phyllis Nanney, M.Sc., 15, Morland Road, Didsbury, Manchester.
Wilfred Louis Offer, B.Sc., St. Mary's School House, Ealing Green, W. 5.
Sydney Stewart Randall, B.Sc., 7, Whitford Gardens, Mitcham.
Oswald Victor Richards, B.Sc., Sherborne, First Avenue, Leeds Road, Wakefield.
Hemendra Kumar Sen, M.A., D.Sc., c/o Messrs. Thomas Cook & Son, Berkeley Street, W. 1.
Norman Charles Wright, M.A., Ph.D., Hannah Dairy Research Institute, Auchincruive, Ayr.

Dr. J. G. F. Druce and Dr. D. C. Jones were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently duly elected as Fellows:

Frederick George Angell, B.Sc.
Alfred William Baldwin, B.Sc., Ph.D.
William Edward Batten, A.R.C.S.
William Andrew Beattie.
Ernest George Beckett, Ph.D., F.I.C.
Hugh Kenneth Black, B.Sc.
George Frederic Bloomfield, B.Sc., A.R.C.S.
John Bradley, B.A., B.Sc.
Dhirendra Nath Chakravarti, M.Sc.

Monmohan Chandra, B.Sc.
John Christie.
Frederick Charles Clapham.
Ernest Gordon Cox, B.Sc.
Harold Albert Hadleigh Crowther.
Joseph Spencer Fawcett.
Arthur Lawrence Fox, B.A., M.S., Ph.D.
Herbert Freundlich, Prof., Ph.D.
Victor Gallafent, B.Sc., A.R.C.S.
Bhawan Showkiram Gidvani, B.Sc.
Joseph Glassman, B.Sc.
Rudolph Maximilian Goepp, Junr., B.S.
Evelyn Reid Lindsay Gow, B.Sc.
Arthur Neville Hambly.
Frederick William Hampshire.
Thomas Lane Harris, B.Sc.
Ralph Gordon Harry.
Margaret Mary Healey, B.Sc.
Robert Haxwell Hicks.
Douglas William Hill, B.Sc., Ph.D.
Harold Hinde.
Cyril Gustav Bidwell Hose, A.R.C.S.
Eric Charles Edward Hunter, B.Sc.
George Harold Jeffery, B.Sc.
Matsusuke Kobayashi, Prof., D.Sc.
Ralph Arthur Letch, A.R.C.S.
William Byres McKay, B.Sc.
George William Grant Maclennan, M.A., B.Sc.
John Macniven.
Roy James MacWalter, B.Sc.
Kishen Lal Malhotra, M.Sc.
Harold John Moss, B.Sc.
Ernest Gilbert Noble, A.R.C.S.
Thomas John Vernon Parry.
William Frank Pavitt, A.I.C.
Reginald John William Reynolds, B.Sc.
Clifford Arthur Rhodes, B.Sc.
Anthony Melland Robinson, B.A.
Chandulal Chhotalal Shah, M.Sc.
Christine Mary Snow, B.A., B.Sc.
Maurice Stacey, B.Sc.
George Basil Stafford, B.Sc.
Joseph John Sullivan, Prof., M.A., Ph.D.
John Frederick Felix Trotter, B.Sc., A.R.C.S.
Evelyn Marie Waldron, B.Sc.
Eric Mervyn Watson, B.Sc., A.I.C.
Gilbert Hayes Whiteford, B.S., A.M., Ph.D.
Evan Clifford Williams, D.Sc.
Patrick Chisholm Young, B.A.

The following papers were read :

"Nitrogen tri-iodide." By H. W. CREMER and D. R. DUNCAN.

"Experiments on the synthesis of anthocyanins. Part VI. The synthesis of chrysanthemin chloride." By S. MURAKAMI, A. ROBERTSON, and R. ROBINSON.

"Experiments on the synthesis of anthocyanins. Part VII. The four isomeric β-glucosides of pelargonidin chloride." By A. LEÓN, A. ROBERTSON, R. ROBINSON, and T. R. SESHADRI.

"Experiments on the synthesis of anthocyanins. Part VIII. A synthesis of oenin chloride." By F. L. LEVY, T. POSTERNAK, and R. ROBINSON.

Extra Meeting held in the Chemical Lecture Theatre of the Imperial College of Science and Technology (by permission of the Governors) on Thursday, December 11th, 1930, at 5.30 p.m.

The President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., was in the Chair.

The PRESIDENT referred to the death of Professor H. B. Dixon, who had agreed to deliver the Third Liversidge Lecture on November

27th, and stated that Professor W. A. Bone had kindly accepted the invitation of the Council to give the Lecture.

He then called upon Professor Bone to deliver the Lecture entitled "Fifty Years' Experimental Research upon the Influence of Steam on the Combustion of Carbonic Oxide (1880–1930)."

At the conclusion of the Lecture, which was illustrated by experiments, a vote of thanks to the Lecturer, proposed by Professor H. E. Armstrong, and seconded by Professor J. R. Partington, was carried with acclamation, and acknowledged by Professor Bone.

The PRESIDENT expressed the thanks of the Society to the Governors of the College for the use of the Lecture Theatre.

Ordinary Scientific Meeting, Thursday, December 18th, 1930, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	*Died.*
Henry Borns	March 17th, 1881.	Dec. 12th, 1930.
Robert Charles Cowley.....	Dec. 3rd, 1908.	May 2nd, 1930.

Mr. J. F. F. Trotter, Mr. W. E. Batten, and Professor F. M. Rowe were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :—

Frederick Cecil Hymas, B.Sc., A.I.C., 15, Raleigh Road, Enfield.
Ethel Margaret Luis, B.Sc., Taychreggan, Broughty Ferry, Angus.
Henry Alfred Piggott, 7, Maple Avenue, Cheadle Hulme, Cheshire.
Douglas John Cruickshank Pirie, B.Sc., 21, Park Avenue, Carnoustie, Angus.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2) :—

Torbjörn Gaarder, D.Phil., Biochemical Laboratory, Bergen Museum, Bergen.
Henri Goldstein, Prof., D.-ès-Sc., Place du Chateau 3, Lausanne.
Frank Clifford Whitmore, A.M., Ph.D., State College, Pennsylvania, U.S.A.

The following papers were read :—

"1-ω-Halogenoalkyl*iso*quinolines and their derivatives." By R. CHILD and F. L. PYMAN.

"A synthesis of hydrastine. Part I." By E. HOPE, F. L. PYMAN, F. G. P. REMFRY, and R. ROBINSON.

"The mechanism of, and constitutional factors controlling, the hydrolysis of carboxylic esters. Part V. Influence of alkyl groups on hydrolytic stability maxima." By C. M. GROOCOCK, C. K. INGOLD, A. JACKSON, and M. I. KELLY.

"The mechanism of and constitutional factors controlling the hydrolysis of carboxylic esters. Part VI. Speeds of consecutive stages of saponification of some normal dicarboxylic esters." By C. K. INGOLD.

The Council has made the following grants from the Research Fund :—

	£	s.	d.
Hydrogen-ion activities of maleic and fumaric acids, and of certain corresponding substituted acids. H. W. Ashton. (East London Coll.)	13	0	0
Derivatives of the *o*-xylidines. E. E. Ayling. (Univ. Coll. Swansea)	7	0	0
Phosphorus derivatives of triarylcarbinols. C. H. Beale. (Univ. Coll., Southampton)	10	0	0
Additive properties of substituted butadienes. G. F. Bloomfield. (Imperial Coll.)	8	10	0
Halogenation of anilides and phenolic ethers. A. E. Bradfield. (Univ. Coll., Bangor)	13	0	0
Ester addition to conjugated esters and ketones. N. Brent. (Imperial Coll.)	7	0	0
Complexes formed in solutions from organic hydroxy-acids and metallic bases. H. T. S. Britton. (Univ. Coll., Exeter) ...	8	10	0
Cannabis Indica resin. H. S. Cahn. (Univ. Coll., Bangor) ...	7	10	0
Constitution of the aloins. R. S. Cahn. (Univ. Coll., Bangor)	7	10	0
The chemistry of unsaturated malonic acids. G. F. Carter. (Imperial Coll.)	6	0	0
Derivatives of methyl phloroglucinol and methyl hydroxyquinol. F. H. S. Curd. (Lond. Sch. of Hygiene)	10	0	0
Thiazine derivatives and allied substances. H. D. K. Drew. (East London Coll.)	8	10	0
Compounds of platinous chloride with phosphines. H. D. K. Drew. (East London Coll.)	13	0	0
Hydroxycarbonyl compounds. J. A. C. Flohren. (East London Coll.)	7	10	0
Extensions of Smiles' reaction. D. T. Gibson. (Glasgow Univ.)	5	0	0
Constitution of carboxyglutaconic esters. B. S. Gidvani. (Imperial Coll.)	8	10	0
Concentration cells of lithium halides in absolute alcohol. J. Glassman. (East London Coll.)	8	10	0
Organic compounds of phosphorus, more particularly phosphorus compounds derived from triphenylcarbinol. H. H. Hatt. (East London Coll.)	8	10	0
Dielectric constants of benzene solutions of some sulphur, selenium, and tellurium compounds, and of certain heterocyclic oxygen compounds. E. C. E. Hunter. (East London Coll.)	13	0	0
(*a*) Cytisine and related alkaloids (*b*) Quaternary ammonium bases in relation to physico-chemical and pharmacological properties. H. R. Ing. (Univ. Coll., London)	13	0	0
Dissociation constants of organic acids. G. H. Jeffrey. (Univ. Coll., Southampton)	13	0	0

	£	s.	d.
Derivatives of malic acid. Brynmor Jones. (Cambridge Univ.)	8	10	0
Mutual solubility of the isomeric butyl alcohols (*cont'd.*). D. C. Jones. (East London Coll.)	8	10	0
Organic compounds of elements of group V. W. J. Jones. (Univ. Coll., Cardiff)	8	10	0
Addition to conjugated unsaturated systems. (Mrs.) M. I. Kelly. (Leeds Univ.)	8	10	0
Synthesis of quinoline compounds of possible anti-malarial activity. W. O. Kermack. (R. Coll. of Phys., Edin.) ...	8	10	0
Tautomerism of olefinic nitriles. R. A. Letch. (Imperial Coll.)	8	10	0
Optical examination of surface films. C. G. Lyons. Cambridge Univ.)	26	0	0
Three-carbon tautomeric change. G. W. G. Maclennan. (Imperial Coll.)	10	0	0
Mutual liquid solubilities. H. J. Moss. (East London Coll.) ...	13	0	0
Spontaneous tautomeric changes in unsaturated compounds. E. G. Noble. (Imperial Coll.)	8	10	0
Hydroxy-carbonyl compounds. W. L. Offer. (East London Coll.)	7	10	0
Stereochemistry of co-ordination compounds of platinum and palladium. F. W. Pinkard. (Birmingham Univ.)... ...	10	0	0
Researches on organic metallic compounds. O. V. Richards. (Leeds Univ.)	5	0	0
(*a*) Syntheses of glucosides. (*b*) Hydroxy-carbonyl compounds. A. Robertson. (Lond. Sch. of Hygiene)	15	0	0
Physico-chemical studies of complex acids, in particular vanadic, niobic, and tantalic acids. R. A. Robinson. (Univ. Coll., Exeter)	13	0	0
(*a*) Hydroxy-carbonyl compounds. (*b*) Constituents of the lichen *Cladonia alpestris*. W. F. Sandrock. (Lond. Sch. of Hygiene)	10	0	0
Investigations on hyponitrites. C. C. Shah. (East London Coll.)	8	10	0
Effect of the solvent on reaction velocity. F. G. Soper. (Univ. Coll., Bangor)	13	0	0
Compounds of metallic salts with semicarbazide and its derivatives. P. C. L. Thorne and G. S. Smith. (Woolwich Poly.)	5	0	0
Cyclic unsaturated acids. J. F. F. Trotter. (Imperial Coll.) ...	7	10	0
Cinchonoid compounds. E. E. Turner. (Bedford Coll. for Women)	10	0	0
Syntheses of cyclic compounds (*cont'd.*). A. I. Vogel. (Univ. Coll., Southampton)	8	10	0
Stereochemistry of co-ordination compounds of platinum and palladium (*cont'd.*). W. Wardlaw. (Birmingham Univ.)	8	10	0
The glutaconic problem. E. M. Watson. (Imperial Coll.) ...	10	0	0
Tautomerism of the β-alkylcinnamic acids in relation to their configurations. J. M. Wright. (Imperial Coll.)	8	10	0
	£445	0	0

ANNUAL REPORTS ON THE PROGRESS OF CHEMISTRY.

Fellows are reminded that application for the Annual Reports for 1930, Volume XXVII, at 5*s*. 6*d*. per copy, should be made to Mr. S. E. Carr. Application must be accompanied by a remittance for 5*s*. 6*d*.

List of Papers, or abstracts thereof, received between November 20th, 1930, and December 18th, 1930. This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.

"An attempted preparation of methanetetrasulphonic acid." By F. B. Kipping.

"Digitalis glucosides. Part III. Glucosides of *Digitalis lanata*." By S. Smith.

"2-Hydroxy-4-methoxy- and 2-methoxy-4-hydroxy-benzaldehydes." By (Miss) T. E. de Kiewiet and H. Stephen.

"The chlorination of iodophenols. Part III. The chlorination of *o*-iodophenol." By S. Buchan and H. McCombie.

"The relative strengths of bases in non-aqueous solutions. Part III." By E. I. Johnson and J. R. Partington.

"The action of Beckmann's mixture on some monocyclic terpenes. Part II. Terpinolene and 'origanene.'" By T. A. Henry and H. Paget.

"Some aliphatic compounds of arsenic." By W. J. C. Dyke, G. Davies, and W. J. Jones.

"Naphthalene-1 : 5-disulphonic acid as a by-product in the monosulphonation of naphthalene." By C. B. Radcliffe and W. F. Short.

"Studies in the naphthalene series. Part III. The preparation of 3-amino-2-naphthyl methyl ether." By G. W. B. Jambuserwala, S. Holt, and F. A. Mason.

"Studies in the naphthalene series. Part IV. The preparation and properties of 2-naphthol-3-sulphonic acid." By S. Holt and F. A. Mason.

"The mechanism of the oxidation of laudanosine." By V. K. Bhagwat, D. K. Moore, and F. L. Pyman.

"The relative directive powers of groups of the forms RO and RR'N in aromatic substitution. Part IX. The nitration of *p*-acetoxyanisole and *p*-benzyloxyanisole." By J. C. Smith.

"The use of the antimony-antimonous oxide electrode in the determination of the concentration of hydrogen ions, and in potentiometric titrations. The Prideaux–Ward universal buffer mixture." By H. T. S. Britton and R. A. Robinson.

"The polysulphides of the alkali metals. Part II. Lithium." By T. G. Pearson and P. L. Robinson.

"The relative strengths of weak bases in non-aqueous solutions. Part IV." By J. R. Partington.

"The conductivity of electrolytes in nitromethane." By C. P. Wright, D. M. Murray-Rust, and Sir H. Hartley.

"Syntheses of antiseptic derivatives of indan-1 : 3-dione. Part I. Interaction of malonyl chloride and of alkylmalonyl chlorides with the methyl ethers of resorcinol and 2-hydroxynaphthalene." By R. Black, H. Shaw, and T. K. Walker.

"The propagation of flame in electric fields. Part I. Distortion of the flame surface." By E. M. Guénault and R. V. Wheeler.

"Salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part I. The carbonyl group in benzaldehyde and acetophenone." By J. W. Baker.

"Salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part II. The nitration of benzaldehyde and acetophenone in sulphuric acid solution." J. W. Baker and W. G. Moffitt.

"Some physical properties of nicotine, and some compounds of nicotine." By H. Barron.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part XIV. Chloro-derivatives." By L. A. Elson and C. S. Gibson.

"*N*-Acyl derivatives of alanine. The resolution of externally compensated *m*-nitrobenzoylalanine." By W. M. Colles and C. S. Gibson.

"The kinetics of the reduction of cuprous oxide. Part I. The reduction at low pressures: with an appendix giving the results of further experiments on the oxidation of copper at low pressures." By F. J. Wilkins.

"*cyclo*Tellurobutane (tetrahydrotellurophen)." By G. T. Morgan and F. H. Burstall.

"The conductivity of electrolytes in nitrobenzenes." By D. M. Murray-Rust, H. J. Hadow, and Sir H. Hartley.

"The essential oil of *Backhousia angustifolia*. Part III. The constitutions of angustione and dehydroangustione." By R. S. Cahn, C. S. Gibson, A. R. Penfold, and J. L. Simonsen.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

GATTERMANN, LUDWIG. Die Praxis des organischen Chemikers. 22nd edition. By HEINRICH WIELAND. Berlin 1930. pp. xii + 409. ill. *M.* 15. (*Recd.* 9/12/30.)
From Geh. Reg.-Rat Professor Dr. H. Wieland.

GLASSTONE, SAMUEL. The electrochemistry of solutions. London 1930. pp. xii + 476. ill. 21*s.* net. (*Recd.* 3/12/30.)
From the Publishers: Messrs. Methuen & Co.

PINE INSTITUTE OF AMERICA. Technical Bulletin No. 1. Rosin in synthetic resins. Prepared by W. B. BURNETT. Jacksonville, Fla. 1930. pp. vi + 97. (*Reference.*) [In mimeograph form.]
From the Institute.

REDGROVE, HERBERT STANLEY, and FOAN, GILBERT A. Paint, powder and patches. London 1930. pp. xii + 170. ill. 7*s.* 6*d.* net. (*Recd.* 1/12/30.)
From the Publishers: Messrs. William Heinemann.

II. *By Purchase.*

BODANSKY, MEYER. Introduction to physiological chemistry. 2nd edition. New York 1930. pp. x + 542. ill. 20*s.* net. (*Recd.* 22/11/30.)

BRUNOLD, CHARLES. L'entropie: son role dans le développement historique de la thermodynamique. Paris 1930. pp. vi + 221. 30 *fr.* (*Recd.* 17/11/30.)

—— Le problème de l'affinité chimique et l'atomistique. Paris 1930. pp. vi + 118. 20 *fr.* (*Recd.* 8/12/30.)

DAVY, SIR HUMPHRY. *See* GREGORY, JOSHUA CRAVEN.

DEWS, HERBERT CLIFFORD. The metallurgy of bronze. London 1930. pp. x + 147. ill. 12*s.* 6*d.* net. (*Recd.* 22/11/30.)

GREGORY, JOSHUA CRAVEN. The scientific achievements of Sir Humphry Davy. London 1930. pp. viii + 144. ill. 6*s.* net. (*Recd.* 22/11/30.)

HAAS, ARTHUR. Quantum chemistry: a short introduction in four non-mathematical lectures. Translated by L. W. CODD. London 1930. pp. x + 177. ill. 6*s.* net. (*Recd.* 22/11/30.)

JAEGER, FRANS MAURITS. I. Spatial arrangements of atomic systems and optical activity. II. Methods, results and problems of precise measurements at high temperatures. III. The construction and structure of ultramarines. New York 1930. pp. x + 450. ill. 20*s.* net. (*Recd.* 22/11/30.)

KRONIG, R. DE L. Band spectra and molecular structure. Cambridge 1930. pp. x + 163. ill. 10*s.* 6*d.* net. (*Recd.* 22/11/30.)

WISSENSCHAFTLICHE ZENTRALSTELLE FÜR ÖL- UND FETTFORSCHUNG, E. V. (WIZÖFF), BERLIN. Einheitliche Untersuchungsmethoden für die Fett- und Wachsindustrie. Part I (2nd edition) bound with Part II (1st edition). Stuttgart 1930. pp. 241. ill. *M.* 16.50. (*Recd.* 2/12/30.)

III. *Pamphlets.*

BAKER, JOHN WILLIAM. Direction of addition of hydrogen bromide to α-methyleneglutaric acid. (From the *Proc. Leeds Phil. Soc.*, 1930, **2**.)

BURTON, HAROLD. Mobile anion tautomerism. Part V. γ-Phenyl-α-*p*-dimethylaminophenylallyl alcohol. (Preliminary notice.) (From the *Proc. Leeds Phil. Soc.*, 1930, **2**.)

INSTITUTION OF CHEMICAL ENGINEERS. The training of a chemical engineer. London 1925. pp. 7.

NORRIS, DOROTHY, and BATES, H. T. Notes on the establishment of *Aleurites Fordii* (tung oil) in the Ranchi district of Chota Nagpur. (From the *Indian Forester*, 1930.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research.* Bulletin No. 8. Ultra-violet window-glazing. By H. E. BECKETT. London 1930. pp. iv + 13. ill.

—— —— Bulletin No. 9. Bonding new concrete to old. By NORMAN DAVEY. London 1930. pp. iv + 4. ill.

—— —— Special Report No. 16. Construction joints in concrete. Bonding new concrete to old. By NORMAN DAVEY. London 1930. pp. vi + 74. ill.

—— —— Technical Paper No. 9. The estimation of free calcium hydroxide in set cements. A calorimetric method. By GEORGE EDWARD BESSEY. London 1930. pp. iv + 25.

—— —— Technical Papers Nos. 10–12. Studies in reinforced concrete. Parts I–III. By WILLIAM HENRY GLANVILLE. London 1930. pp. vi + 37, vi + 49, vi + 39. ill.

—— *Committee on Welded Containers.* Report. London 1930. pp. iv + 51. ill.

—— *Food Investigation Board.* Special Report No. 3. The methods used for the inspection of canned foods and their reliability for this purpose. Part I. Canned meat. By WILLIAM GEORGE SAVAGE. London 1920. pp. 23.

—— —— Special Report No. 10. The methods used for the inspection of canned foods. Part II. Canned marine products. By WILLIAM GEORGE SAVAGE. London 1922. pp. iv + 32.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation Board*. Special Report No. 38. Wastage in imported fruit: its nature, extent and prevention. By J. BARKER. London 1930. pp. vi + 62. ill.

—— —— Special Report No. 39. The prevention of wastage in New Zealand apples. By J. BARKER. London 1930. pp. vi + 26. ill.

—— *Fuel Research*. Physical and chemical survey of the national coal resources, No. 17. The significance of spores in the correlation of coal seams. Part I.—The Parkgate seam—South Yorkshire area. By L. SLATER, MARJORIE M. EVANS, and GLADYS E. EDDY. London 1930. pp. vi + 28. ill.

—— —— Technical Paper No. 25. The reactivity of coke. 3.—The influence of iron compounds. By JOHN HENRY JONES, JAMES GRIEVE KING and FRANK STURDY SINNATT. London 1930. pp. viii + 32. ill.

—— —— Technical Paper No. 26. The influence of size of coal during gas manufacture. London 1930. pp. vi + 55. ill.

—— —— Technical Paper No. 27. The measurement of a rapidly fluctuating flow of gas. By JAMES GRIEVE KING and B. H. WILLIAMS. London 1930. pp. vi + 18. ill.

—— —— Technical Paper No. 28. The determination of aromatic, unsaturated and naphthene hydrocarbons in light oils and motor spirits. By ALEXANDER BERNARD MANNING and F. M. E. SHEPHERD. London 1930. pp. iv + 14. ill.

—— *Steel Structures Research*. Verbatim proceedings of a conference . . ., 16th October 1930. London 1930. pp. iv + 38.

SHERWOOD, R. C. Effects of wheat drying upon milling and baking properties. (Bulletin No. 66, State Dept. Agric., Minnesota.) St. Paul, Minn. 1929. pp. 36. ill.

SOUTH AFRICA, UNION OF. *Department of Agriculture*. (Division of Chemistry Series, No. 104.) Studies in pasture management. A preliminary report on the seasonal composition of certain South African pasture grasses in relation to their manuring and intensity of grazing. By R. R. STAPLES and A. J. TAYLOR. (From the *S. African J. Sci.*, 1929, **26**.). ill.

—— —— (Division of Chemistry Series, No. 105.) Citrus by-products research: orange oil. (From *Farming in S. Africa*, 1930.)

—— —— (Division of Chemistry Series, No. 110.) Microchemical analysis of soils. By JOHANNES LODEWIKUS STEENKAMP. (From the *J. S. African Chem. Inst.*, 1930.)

—— —— (Division of Chemistry Series, No. 111.) Notes on the colorimetric determination of p_H values in alkaline soils. By P. KAMERMAN. (From the *J. S. African Chem. Inst.*, 1930.)

SOUTH AFRICA, UNION OF. *Department of Agriculture.* (Division of Chemistry Series, No. 112.) Certain aspects of the acid to sugar ratio in oranges. By D. J. R. VAN WIJK. (From the *J. S. African Chem. Inst.*, 1930.)

SOUTH MANCHURIA RAILWAY COMPANY. Abstracts from the Report of the Central Laboratory. Dairen 1929. pp. 42. ill.

SPRUYT, J. P. Een onderzoek naar een colorimetrische methode voor de keuring van rijst op zilvervlies- (anti-beri-beri-vitamine-) gehalte. (From the *Med. Dienst. Volksgezond. Ned.-Indie*, 1930.)

TAYLOR, FRANK SHERWOOD. A survey of Greek alchemy. (From the *J. Hellenic Studies*, 1930, **50**.) ill.

UNITED STATES. *Department of Agriculture.* Technical Bulletin No. 169. The wearing quality and other properties of vegetable-tanned and of chrome-retanned sole leather. By R. W. FREY and I. D. CLARKE. Washington 1930. pp. 17. ill.

—— —— Technical Bulletin No. 170. A pipette method of mechanical analysis of soils based on improved dispersion procedure. By L. B. OLMSTEAD, LYLE T. ALEXANDER, and H. E. MIDDLETON. Washington 1930. pp. 22. ill.

—— —— Technical Bulletin No. 178. Properties of soils which influence soil erosion. By H. E. MIDDLETON. Washington 1930. pp. 16.

—— *Department of Commerce.* Bureau of Mines. Bulletin 281. Precipitation of lead and copper from solution on sponge iron. By G. L. OLDRIGHT [and others]. Washington 1928. pp. viii + 131. ill.

—— —— —— Bulletin 294. Carburetion of combustible gas with butane and propane-butane mixtures with particular reference to the carburetion of water gas. [By WILLIAM W. ODELL.] Washington 1929. pp. vi + 96. ill.

—— —— —— Technical Paper 409. Spontaneous heating of coal. By JOSEPH D. DAVIS and D. A. REYNOLDS. Washington 1928. pp. vi + 74. ill.

—— —— —— Technical Paper 424. Thermodynamic properties of oxygen and nitrogen. By RUSSELL W. MILLAR and JOHN D. SULLIVAN. Washington 1928. pp. ii + 20. ill.

—— —— —— Technical Paper 446. Terminology in coal research. By REINHARDT THIESSEN and WILFRID FRANCIS. Washington 1929. pp. iv + 27. ill.

—— —— —— Technical Paper 448. Coal-dust explosions in mines: causes, effects, and recommendations for prevention. By GEORGE S. RICE. Washington 1929. pp. ii + 24.

—— —— —— Technical Paper 450. Inflammability of mixed gases. By G. W. JONES. Washington 1929. pp. iv + 38. ill.

UNITED STATES. *Department of Commerce.* Bureau of Mines. Technical Paper 451. Calcium sulphate retarders for Portland cement clinker. By ERNEST E. BERGER. Washington 1929. pp. ii + 35. ill.

—— —— —— Technical Paper 456. Classification and tabling of difficult ores with particular attention to fluorspar. By W. H. COGHILL. Washington 1929. pp. ii + 40. ill.

—— —— —— Technical Paper 462. Safety at natural-gasoline plants. By G. B. SHEA. Washington 1929. pp. vi + 109. ill.

—— —— Bureau of Standards. Domestic and industrial fuel oils. Commercial standard CS12–29. Washington 1929. pp. vi + 10.

—— —— —— Circular No. 377. Some properties of sponge rubber. Washington 1929. pp. 8. ill.

—— —— —— Circular No. 381. Sodium oxalate as a standard in volumetric analysis. pp. 9.

—— —— —— Circular No. 382. Bismuth. [By J. G. THOMPSON.] Washington 1930. pp. 41.

—— —— —— Miscellaneous Publication No. 108. Manufacture and properties of a cellulose product (maizolith) from cornstalks and corncobs. By C. E. HARTFORD. Washington 1930. pp. 10.

WEST, CLARENCE JAY. [Compiler.] Five years of research in industry 1926–1930. A reading list. New York 1930. pp. 91.

WITTE, ADOLF ANTONIUS MARIA. Nitro-benzolsulfonhydraziden. Leiden 1930. pp. xii + 119.

WOERDEN, SIMON VAN. Refractometrisch onderzoek van methylhexahydroacetophenonen. Leiden 1924. pp. viii + 84.

WRIGHT, CHARLES HAROLD. Correlations between the specific conductivities of soil extracts, nitric nitrogen and soluble calcium. (From the *8th Ann. Bull., Agric. Dept. Nigeria,* 1929.) ill.

ZAPAN, MIHAI. Sur la chloruration et la bromuration catalytiques des gaz riches en hydrocarbures méthaniques. Paris 1930. pp. 101. ill.

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 15th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
John Hodgkin	Nov. 16th, 1882.	Dec. 26th, 1930.
Rt. Hon. Lord Melchett	Feb. 17th, 1927.	Dec. 27th, 1930.
William Sloan Mills	Feb. 15th, 1905.	Dec. 30th, 1930.
Benjamin L. Murray	Feb. 17th, 1904.	Dec. 12th, 1930.
Edgar Sanders	Feb. 15th, 1923.	Oct. 13th, 1930.
William Hill Saunders	Dec. 2nd, 1920.	Jan. 3rd, 1931.
John Frederick F. Trotter	Dec. 4th, 1930.	Dec. 20th, 1930.
George Joseph Warner, ...	Dec. 7th, 1871.	Dec. 22nd, 1930.

The PRESIDENT announced that in accordance with Bye-Law VI, the names of the members of Council who retire at the next Annual General Meeting, and who are ineligible for the same office until after the lapse of one year, are as follows :

Vice-Presidents who have filled the office of President : Prof. H. B. Baker, Sir William J. Pope, and Sir James Walker.

Vice-Presidents who have not filled the office of President : Dr. W. H. Mills and Prof. J. C. Philip.

Ordinary Members of Council :

(*a*) Town Members : Prof. W. A. Bone, Dr. H. King, Prof. J. L. Simonsen, Dr. S. Sugden, Mr. H. Terrey, and Dr. M. A. Whiteley.

(*b*) Country Members : Dr. W. M. Cumming and Dr. N. V. Sidgwick.

The PRESIDENT, who was elected last year to a further period of office of two years, has tendered his resignation, which has been accepted by the Council.

The following vacant places in the Council, therefore, fall due to be filled at the Annual General Meeting of the Society, to be held at Burlington House on Thursday, March 26th, 1931 :

President, one vacancy.

Vice-Presidents who have filled the office of President, three vacancies.

Vice-Presidents who have not filled the office of President, two vacancies.

Ordinary Members of Council :

(*a*) Town Members (*i.e.* those living within a radius of fifty miles from London), six vacancies.

(*b*) Country Members (*i.e.* those living beyond a radius of fifty miles from London), two vacancies.

The Council has nominated Prof. G. G. Henderson to the office of President.

The PRESIDENT also announced that a communication had been received from the British Association for the Advancement of Science, inviting the assistance of the Council and the Fellows of the Society in securing or providing private hospitality for Chemists, especially from the Dominions and foreign countries, attending the Centenary Meeting of the Association to be held in London from September 23rd to 30th, 1931. Offers of hospitality should be sent to the Secretaries, The British Association, Burlington House, Piccadilly, London, W.1, who will be glad to receive them, if possible, by Easter.

The following were formally admitted Fellows of the Chemical Society :

Messrs. E. G. Noble, R. A. Letch, C. H. Beale, and A. W. Middleton.

Forms of Recommendation for Fellowship were read for the time in favour of :

John Dewar, B.Sc., 32, Bishop Street, Rothesay, Bute.
John Frederick James Dippy, B.Sc., Lawrenny, St. Monica Avenue, Maindy, Cardiff.
Graham Edward Foster, Ph.D., A.I.C., Lyndene, Essex Road, Dartford.
Riki Horiuchi, c/o Takasago Perfumery Company, Ltd., Kamata, Tokyo-Fu.
Frederick William Kirkbride, 1a, Prospect Row, Cambridge.
William Jefferys Lesley, M.Sc., Ph.D., A.I.C., 11, Grove Road, E.11.
Edward Maurice Frederick Payne, B.A., B.Sc., 102, Musley Hill, Ware, Herts.
Thomas Murray Simpson, M.Sc., 223, Victoria Road, Woodstock, Cape Town.
Reece Henry Vallance, M.Sc., F.I.C., 11, Ashfield Road, King's Heath, Birmingham.
Albert Leslie Williams, B.Sc., A.R.C.S., 21, Raglan Road, Plumstead, S.E.18.

The following Forms of Recommendation for Fellowship have

been authorised by the Council for presentation to ballot under Bye-Law I (2):

Luigi Mascarelli, Prof. Dr., Istituto di Chimica Farmaceutica, R. Universita, Corso Raffaello 31, Turin.

Enrique Moles, Prof. Dr., Laboratorios de Química Inorganic y Teorica, S. Bernardo 49, Madrid.

Henri Moureu, Dr., 18, Rue Pierre Curie, Paris.

The following papers were read:

"10-Chloro-5:10-dihydrophenarsazine and its derivatives. Part XIV. Chloro-derivatives." By L. A. Elson and C. S. Gibson.

"The essential oil of *Backhousia angustifolia*. Part III. The constitution of angustione and dehydroangustione." By R. S. Cahn, C. S. Gibson, A. R. Penfold, and J. L. Simonsen.

"Investigations of the olefinic acids. Part IV. The two types of tautomerism of itaconic acids. Observations on the connexion between configurational and tautomeric changes in alkali." By R. P. Linstead and J. T. W. Mann.

"Investigations of the olefinic acids. Part V. The influence of bases on the condensation of aldehydes with malonic acid; and a note on the Knoevenagel reaction." By S. E. Boxer and R. P. Linstead.

At the next Ordinary Scientific Meeting to be held on Thursday, February 5th, 1931, at 8 p.m., the following papers will be read:

"Salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part I. The carbonyl group in benzaldehyde and acetophenone." By J. W. Baker.

"Salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part II. The nitration of benzaldehyde and acetophenone in sulphuric acid solution." By J. W. Baker and W. G. Moffitt.

"The properties of the chlorides of sulphur. Part V. Metastable states." By T. M. Lowry and G. Jessop.

"Polycyclic aromatic hydrocarbons. Part II. The non-existence of 1:2:7:8-dibenzanthracene." By J. W. Cook.

"Polycyclic aromatic hydrocarbons. Part III. Derivatives of 1:2:5:6-dibenzanthracene." By J. W. Cook.

"Polycyclic aromatic hydrocarbons. Part IV. Condensed derivatives of 1:2-benzanthracene." By J. W. Cook.

Telephone: The Society's Telephone Number is now Regent 6322.

THE SECOND PEDLER LECTURE.

The Second Pedler Lecture, entitled "Studies in Biological Oxidation," will be delivered by Geh. Reg.-Rat Professor Dr. H. Wieland, of Munich, on Friday, March 6th, 1931, at 5.30 p.m., in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W.1 (by kind permission of the Council of that Institution). Tickets of admission will not be required.

THE 90TH ANNUAL GENERAL MEETING AND THE ANNIVERSARY DINNER.

The 90th Annual General Meeting will be held on Thursday, March 26th, 1931, at 4 p.m., and the Anniversary Dinner will take place the same evening at the Hotel Victoria, Northumberland Avenue, W.C.2. Further particulars will be circulated later.

List of papers, or abstracts thereof, received between December 18th, 1930, and January 15th, 1931. (This List does not include the titles of papers which have been read at an ordinary Scientific Meeting, or which have appeared in the Journal.)

"The parachor and chemical constitution. Part XVI. Silicon compounds." By S. SUGDEN and H. WILKINS.

"Catalytic influences in three-carbon tautomerism. Part II. The action of acid catalysts on ketones." By G. A. R. KON.

"The analysis of mixtures of hydrogen, methane, and ethane." By O. J. WALKER and S. N. SHUKLA.

"The intramolecular strain in substituted dihydroresorcinols. Part I." By L. E. HINKEL, J. F. J. DIPPY, E. E. AYLING, and T. H. ANGEL.

"The properties of nicotine and its derivatives. Part III. Chloronicotine and methylnicotine." By T. M. LOWRY and H. K. GORE.

"Ortho-esters of phenylacetic acid." By P. P. T. SAH, S. Y. MA, and C. H. KAO.

"Equilibrium constants for the decomposition of ammonium bicarbonate." By W. K. HUTCHISON.

"The viscosity and density of rubidium nitrate solutions." By H. G. SMITH, J. H. WOLFENDEN, and Sir H. HARTLEY.

"The properties of the chlorides of sulphur. Part V. Metastable states." By T. M. LOWRY and G. JESSOP.

"The preparation of aromatic acid amides." By C. H. KAO and S. Y. MA.

"Co-ordinated compounds of the alkali metals. Part II." By F. M. BREWER.

"The halogenation of optically active phenylmethylcarbinol in the presence and absence of pyridine by thionyl chloride and the chlorides and oxychloride of phosphorus." By J. KENYON, H. PHILLIPS, and F. M. H. TAYLOR.

"Some reactions of propenyl phenyl ketone with semicarbazides and thiosemicarbazides." By A. Y. LIVINGSTONE and F. J. WILSON.

"The lupin alkaloids. Part III." By G. R. CLEMO, R. RAPER, and C. R. S. TENNISWOOD.

"Studies in electro-endosmosis. Part IV. The electro-endosmosis of some organic liquids against a glass surface." By F. FAIRBROTHER and M. BALKIN.

"Polycyclic aromatic hydrocarbons. Part II. The non-existence of 1 : 2 : 7 : 8-dibenzanthracene." By J. W. COOK.

"Polycyclic aromatic hydrocarbons. Part III. Derivatives of 1 : 2 : 5 : 6-dibenzanthracene." By J. W. COOK.

"Polycyclic aromatic hydrocarbons. Part IV. Condensed derivatives of 1 : 2-benzanthracene." By J. W. COOK.

"The chemistry of the glutaconic acids. Part XXII. Optically active $\alpha\gamma$-dimethylglutaconic acid." By T. H. MCCOMBIE, J. PACKER, and J. F. THORPE.

"ψ-Cyanine dyes containing pyridine or β-naphthaquinoline nuclei." By (MISS) F. M. HAMER and (MRS.) M. I. KEELY.

"Studies in the composition of coal. Methods for the rational analysis of coal." By W. FRANCIS and R. V. WHEELER.

"The compound uronic acids. Structure of the aldobionic acid from gum arabic." By S. W. CHALLINOR, W. N. HAWORTH, and E. L. HIRST.

"The catalytic action of hydrogen on the carbon monoxide flame." By W. E. GARNER, D. A. HALL, and F. E. HARVEY.

"The use of tetramethylene dibromide in the synthetical formation of closed carbon chains." By L. J. GOLDSWORTHY.

"Derivatives of 1 : 2-dihydroxythioxanthone." By A. A. LEVI and S. SMILES.

"The nitration of 6-methoxy-*m*-toluic acid. A correction." By J. L. SIMONSEN.

"A new method for the preparation of organo-thallium halides." By F. CHALLENGER and (MISS) B. PARKER.

"The glutaconic problem. Part I. The structure of the cyanoglutaconic esters." By G. A. R. KON and H. R. NANJI.

"Some substitution products of 2-nitro- and 2-acetamido-diphenyl ethers and the corresponding diphenylene oxides." By H. MCCOMBIE, W. G. MACMILLAN, and H. A. SCARBOROUGH.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 19th, 1931.

ASHTON, HERBERT WILLIAM, 37, Caversham Avenue, Palmer's Green, N. 13. British (English). Chemical Research Student. B.Sc. (2nd Class Chem., London, June 1930). (*Signed by*) J. R. Partington, W. H. Patterson, H. D. K. Drew, R. J. Winterton.

BRENT, MAURICE, "Frogmore," The Drive, Wembley Park, Middlesex. British. Research. A.R.C.S., B.Sc. To receive the Journals of the Society in order to keep abreast of modern developments in Chemistry. (*Signed by*) E. H. Farmer, G. A. R. Kon, M. A. Whiteley.

CARTER, GEOFFREY FRANK, 1B, Broadlands Road, Highgate, N. 6. British. Research Student. B.Sc. (Lond.), A.R.C.S. (Royal College of Science). At present engaged in Organic Chemistry research at the Imperial College. (*Signed by*) M. A. Whiteley, R. P. Linstead, H. L. Riley.

DESAI, MAHENDRA HARILAL, 24, Queensborough Terrace, Bayswater, W. 2. Hindu. Student. B.Sc. (1st Class), Bombay University. Research student in Organic Chemistry for Ph.D., Royal College of Science. (*Signed by*) E. H. Farmer, G. A. R. Kon, M. A. Whiteley.

DEWAR, JOHN, 32, Bishop Street, Rothesay, Bute. Lecture Assistant, Chemistry Dept., United College, University of St. Andrews. Graduated B.Sc. with 1st Class Honours in Chemistry at University of Glasgow in June 1930. Now on teaching staff of St. Andrews University; also engaged in research work for the degree of Ph.D. (*Signed by*) G. G. Henderson, John Read, J. C. Irvine.

DIPPY, JOHN FREDERICK JAMES, "Lawrenny," St. Monica Avenue, Maindy, Cardiff. British. Assist. Lecturer in Chemistry, Cardiff Technical College. B.Sc. with 1st Class Hons. in Chemistry (Wales), Swansea University College. At present a member of the lecturing staff of the Chemistry Dept., Cardiff Technical College. *J.C.S.*, 1930, 725 (J. F. J. Dippy and N. H. Hartshorne); *ibid.*, 1387 (L. E. Hinkel and J. F. J. Dippy). (*Signed by*) H. B. Watson, E. A. Rudge, W. J. Jones.

EVANS, THOMAS WILLIAM, 2, Ellesmere Road, Pemberton, Wigan. Welsh. Chief Chemist to Pemberton Colliery Co. for twenty-five years. Six years with the Brymbo Steel and Iron Co., Wrexham. M.I.Chem.E. (*Signed by*) Ernest B. Naylor, Wilfred Harrison, Samuel Hill.

FAITH, IVY KATHLEEN, "Bush Lodge," Southgate, N. 14. British. Student. B.Sc. at Bedford College, London. (*Signed by*) E. E. Turner, M. S. Lesslie, James F. Spencer.

FLOHREN, JOHN ALBERT CHARLES, 8, Conway Road, N. 15. British. Research Student. B.Sc. East London College, U.L.; Degree taken in Special Chemistry, 1929. Since engaged in research work in Organic Chemistry under Dr. A. Robertson. (*Signed by*) A. Robertson, J. R. Partington, D. C. Jones.

FOSTER, GRAHAM EDWARD, "Lyndene," Essex Road, Dartford, Kent. British. Research Chemist to Messrs. Burroughs, Wellcome & Co., Dartford. B.Sc. (Lond.), Ph.D. (Lond.), A.I.C. Research Student at King's College, London (1924–1927); Research Chemist to B. W. & Co. (1927 to present). Papers contributed with Arthur Fairbourne, M.A., M.Sc., F.I.C. *J.C.S.*, 1925 (2759); 1926 (3146 and 3148); 1930 (1275). (*Signed by*) Samuel Smiles, A. J. Allmand, S. Smith.

GAGNON, PAUL EDOUARD, Laval University, Quebec, Canada. British. Lecturer. B.A., Chemist Diploma. Licence-ès-sciences (Laval, Canada); D.-ès-Sc. (Paris, France). Student (1922–1926), Laval, Canada, Research (1926–1929), Paris; Research (1929–1930) R.C.S., London. *Ann. chim.* 1929, [10], 22, 296, and *Compt. rend.*, 1929, 189, 217. (*Signed by*) Jocelyn Thorpe, R. P. Linstead, M. A. Whiteley.

HOFFMAN, HERBERT VICTOR, 72, Wembley Park Drive, Wembley Park, Middlesex. British. Chemist. B.Sc., University College, London (2nd Class Hons. Chemistry). Research Student of Chemistry, University College, London. (*Signed by*) Henry Terrey, L. F. Gilbert, R. Winstanley Lunt.

HORIUCHI, RIKI, c/o Takasago Perfumery Company, Ltd., Kamata, Tokyo-Fu, Japan. Japanese. Director and Factory Manager of Takasago Perfumery Co., Ltd., and Lecturer of Chemistry, Waseda Univ., Tokyo. Graduate (Chemistry), Kyoto Imperial Univ. (1918); Doctor of Science, Kyoto Imperial Univ. (1928). Factory Manager of Takasago Perfumery Co., Ltd., since 1920. Published "On the Formation of Tripheny! *para*-Rosaniline Hydrochloride" in the Memoirs of the College of Science, Kyoto Imperial Univ., 1921; "On the Transformation of Aliphatic Terpenes—A Synthesis of Menthol" in the same journal, 1928; "Induced Reactions. I–V. On the Oxidation of Anethol, etc.," in the *Journ. Chem. Soc. Japan*, 1923–1928. (*Signed by*) Joji Sakurai, Toyokichi Takamatsu, Riko Majima.

HYMAS, FREDERICK CECIL, 15, Raleigh Road, Enfield, Middlesex. British. Assistant Analyst. B.Sc. (Hons.) (Lond.). A.I.C. Published work: "Tests for Impurities in Ether," Part I, *Analyst*, 1928, **53**, 201; "The Oxidation of Ether: the Effect of Certain Gases," *Quart. J. Pharm.*, 1929, **2**, 278 (with G. Middleton, B.Sc., A.I.C.); "Photo-chemical Methods of Testing Sources of Ultra-violet Radiation," *ibid.*, 1929, **2**, 281; "The Determination of Ascaridole in Chenopodium Oil," *Analyst*, 1930, **55**, 180 (with T. T. Cocking, F.I.C.). (*Signed by*) Charles Alex. Hill, Francis H. Carr, C. Edwd. Sage.

KIRKBRIDE, FREDERICK WILLIAM, 1A, Prospect Row, Cambridge. British. Research Student. B.A. (Cantab.). 1st Class in Part I, 2nd Class in Part II, of Natural Science Tripos, Cambridge. (*Signed by*) R. G. W. Norrish, J. G. A. Griffiths, C. G. Lyons.

KRETCHMAR, HARRY HARMAN, 5, Smith Street, Perth, Western Australia. British. Chemist in Works of Plaistowe & Co., Ltd., Perth, W.A. B.Sc., Univ. of Western Australia. Scholarship and Bursary holder during whole of Univ. and previous Public School courses. Temporary Senior Demonstrator in Dept. of Physics, Univ. of W.A., pending the appointment of Dr. Nimmo. Vacational experience (during Univ. course) with C.S.I.R. under Professor Wilsmore. (*Signed by*) N. T. M. Wilsmore, Edward S. Simpson, A. C. D. Rivett.

KURIYAN, KURUVILA ITTYERAH, 112, Gower Street, W.C. 1. Indian. Research Student (Ph.D. Student Univ. College, London). B.A. (Madras); M.Sc. (Agra), India. (*Signed by*) C. K. Ingold, J. N. E. Day, Henry Terrey.

LAMBERT, ERNEST WILLIAM, 264, Ardgowan Road, Catford, S.E. 6. British. Teacher of Chemistry, Technical College, Shrewsbury, Shropshire. B.A., Camb. Science master, Grammar School, Thetford, Norfolk, 1928–1929. (*Signed by*) W. H. Mills, F. B. Kipping, R. G. W. Norrish.

LANGDON, HAROLD LESLIE, "Alleyn," Hopcott, Minehead, Somerset. British. Schoolmaster. B.Sc. (2nd Class Hons. Chem. Lond.). Teacher of Science for five years. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson.

LESLEY, WILLIAM JEFFERYS, 11, Grove Road, Wanstead, E. 11. English.

Technical Chemist. M.Sc. (1927) (Lond.); Ph.D. (1930) (Lond.), A.I.C. Publications: *Journ. Far. Soc.*, 1929, XXV, 570; 1930, XXVI, 69. (*Signed by*) Henry J. S. Sand, E. de Barry Barnett, A. M. Ward.

LOWE, ARTHUR REGINALD, "Falklands," Station Road, Felixstowe, Suffolk; (in term time) 7, Kempsford Gardens, Earl's Court, S.W. 5. British. Chemist. B.Sc. (Lond.) (2nd Class Hons.), and Associate of the Royal College of Science. (*Signed by*) Jocelyn Thorpe, R. P. Linstead, G. A. R. Kon.

LUIS, ETHEL MARGARET, Taychreggan, Broughty Ferry, Angus. British. Research Student. B.Sc. (Lond.), 1st Class Hons. in Chemistry. Conjoint author of the paper "Sur Quelques Nouveaux Couples de Glycols Trisubstitués Stéréoisomères" (*Bull. Soc. chim.*, 1929, [iv], **45**, 414), by McKenzie, Luis, Tiffeneau and Weill. (*Signed by*) Alex. McKenzie, Jas. R. Myles, Agnes G. Mitchell.

MCLAUGHLIN, ROLAND RUSK, 4, May Street, Toronto 5, Canada. Canadian Research Chemist. M.A.Sc., M.A., Ph.D. (Univ. of Toronto). Engaged in research in the Dept. of Chemical Engineering, Univ. of Toronto, 1922–1923, 1924–1929. Grocers' Company Research Fellow, Lister Institute, London, 1930. Papers: "The Constitution of Rubber," *Trans. Roy. Soc. Canada*, 1922, 16, III, 27–47; "The Chlorination of Methane," *Canadian Journ. of Research*, 1929, I, 240–255; "A Study of Some Factors Influencing the Activity of Aluminium and Ferric Chlorides in the Friedel and Crafts Reaction"; *ibid.*, 1929, I, 400–404. (*Signed by*) Arthur Harden, Robert Robison, S. S. Zilva.

MOUNTFORT, LOUIS FREDERIC, "Claverings," Montagu Road, Edmonton, N. 9. British. Resident Engineer and Manager, Edmonton Sewage Works. Chemical analysis for sewage disposal works. Interested in study of physical chemistry and allied subjects and desire advantage of library. (*Signed by*) P. G. Lloyd, W. H. Duckworth, James H. Kershaw.

NANNEY, PHYLLIS, 15, Moorland Road, Didsbury, Manchester. English. Teaching. B.Sc. (Manchester); M.Sc. (Manchester). Reason for wishing admission to the Society is to study further the development of Chemistry. (*Signed by*) Frederick Challenger, Arthur Lapworth, G. N. Burkhardt, Fred Fairbrother.

OFFER, WILFRED LOUIS, St. Mary's School House, Ealing Green, W. 5. British. Student. B.Sc. (Special), London Univ. (East London College). B.Sc. degree taken in Chemistry, June 1929. Engaged in research work in Organic Chemistry, under Dr. A. Robertson, since Sept. 1929. (*Signed by*) A. Robertson, J. R. Partington, D. C. Jones.

PAYNE, EDWARD MAURICE FREDERICK, 102, Musley Hill, Ware, Herts. British. B.A. Cambridge (Hons. Chemistry); B.Sc. (Hons. London). Desiring to keep in touch with the advance of and research in Chemistry. (*Signed by*) F. G. Mann, H. McCombie, R. G. W. Norrish.

PIGGOTT, HENRY ALFRED, 7, Maple Avenue, Cheadle Hulme, Cheshire. British. Chemist. Research student, Royal College of Science, 1921–1924. Chemist to British Dyestuffs Corp., Ltd., 1925 to date. *J.C.S.*, 1922, 2381, 2793; 1923, 1469, 2745; 1924, 168. (*Signed by*) E. H. Rodd, M. Lapworth, W. A. Silvester.

PIRIE, DOUGLAS JOHN CRUICKSHANK, 21, Park Avenue, Carnoustie, Angus. Scottish. Lecture Assistant. B.Sc. (St. Andrews), with 1st Class Hons. in Chemistry. Research Student. (*Signed by*) Alex. McKenzie, John D. M. Ross, Isobel A. Smith, Robert Roger.

QUIBELL, THOMAS HENRY HALL, 51, Maids Causeway, Cambridge. British. Research Student. B.A. Cambridge. Natural Sciences Tripos, 1928, Part I,

Class I; 1929, Part II (Chemistry), Class I. (*Signed by*) W. J. Pope, W. H. Mills, P. Maitland.

RANDALL, SYDNEY STEWART, 7, Whitford Gardens, Mitcham, Surrey. British. Research Assistant in Dept. Path. Chemistry, U.C.H. Medical School. B.Sc., Hons. Chemistry, London. "Observations on Iodine containing Compounds of Thyroid Gland. Isolation of *dl*-3 : 5-Di-iodotyrosine," *Biochem. Journ.*, 1929, XXIII, No. 3; "Chemical Assay of Thyroid Gland," *Quart. Journ. of Pharmacy and Pharmacology*, 1929, Vol. II, No. 4. (*Signed by*) C. R. Harington, A. C. Chibnall, George Barger.

RICHARDS, OSWALD VICTOR, Sherborne, 1st Avenue, Leeds Road, Wakefield, Yorks. English. Research Student (Organic Chemistry). B.Sc. Leeds. Desirous of keeping in touch with advance in chemical science. (*Signed by*) Frederick Challenger, J. W. Baker, C. W. Shoppee.

SANDROCK, WILLIAM FREDERICK, 61, Buxton Road, Chingford, Essex, E. 4. British. B.Sc., East London College. I desire to become a member of the Chemical Society in order that I shall be able to become acquainted with the recent advances in chemical knowledge. (*Signed by*) A. Robertson, E. T. Jones, F. H. Curd, R. J. Stephenson.

SEN, HEMENDRA KUMAR, Calcutta, Science College, 92, Upper Circular Road, Calcutta, India. London address : c/o Thomas Cook & Son, Berkeley Street, London. Indian. Professor of Applied Chemistry, Calcutta University. M.A. (Calc.); D.I.C., D.Sc. (London.) "Synthesis of Tetrahydro-oxyquinolines," *J.C.S.*, 1915; "Condensation of Ketones with Phenols," *ibid.*, 1914; "Oxidation of Condensation Products from Above," *ibid.*, 1922; "Tetramethylammonium Hyponitrite," *ibid.*, 1911; "Synthesis of *iso*Quinoline and Tetrahydrophenanthridones and Tetrahydroacridones (Series in the *Journ. Ind. Chem. Soc.*); "Saccharification and Fermentation of Cellulose," *ibid.*; "Ignition Temperature of Gases," *ibid.* Author of "High-temperature Flames and their Thermodynamics" (Patria University Readership Lecture, shortly to be published); etc., etc. (*Signed by*) C. K. Ingold, O. L. Brady, George A. R. Kon.

SILCOX, ARTHUR LEONARD, Eastbourne, Langland Bay, Mumbles, Swansea. British. Research Student at Swansea Univ. Coll. B.Sc. (Wales); 1st Class Hons. in Chemistry. (*Signed by*) J. E. Coates, E. E. Ayling, N. H. Hartshorne.

SIMPSON, THOMAS MURRAY, 223, Victoria Road, Woodstock, Cape Town, South Africa. British. Demonstrator. M.Sc. (Cape Town) with distinction in Chemistry. Demonstrator, Chemistry Dept., University of Cape Town. (*Signed by*) E. Newbery, J. Smeath Thomas, C. S. Gibson.

SPEAKMAN, JAMES CLARE, St. Aidan's Vicarage, Park, Sheffield. British. Assistant Lecturer in Chemistry, Univ. of Sheffield. M.Sc. (Sheffield); Ph.D. (Sheffield). 1st Class Honours in Chemistry for B.Sc. (Sheffield). Research on the Electro-deposition of Cobalt-Nickel Alloys, *Trans. Faraday Soc.*, 1930, 26, 565; *Analyst*, 1930, 93. (*Signed by*) W. P. Wynne, G. M. Bennett, S. Glasstone.

VALLANCE, REECE HENRY, 11, Ashfield Road, King's Heath, Birmingham. English. Lecturer in Chemistry. M.Sc. (B'ham.), F.I.C. Science Master, Knox Institute, Haddington, 1910–1911; King's Norton Secondary School, 1911–1919; Lecturer in Chemistry, Central Technical College, Birmingham, since 1919. Various research papers, see *J. Soc. Chem. Ind.*, 1926, **45**, 66r; *J. Inst. Metals*, 1924, **31**, 75; also in *J.C.S.* (see below). Literary work : "Textbook of Inorganic Chemistry" (Friend), Vol. 7, Part 2; "Sulphur, Selenium and Tellurium" (with D. F. Twiss and A. R. Russell), Vol. 7, Part 3;

"Chromium and its Congeners" (with A. A. Eldridge), *J.C.S.*, 1922, **121**, 466; 1927, 1328; 1929, 2326; 1930, 718. (*Signed by*) J. Newton Friend, J. Cooper Duff, R. M. D. Hodge.

WALKER, JAMES, 3, Walker Place, Arbroath, Angus. British. Research Student. B.Sc. (St. Andrews) with 1st Class Honours in Chemistry. (*Signed by*) John Read, Geo. J. Robertson, James Y. Macdonald, J. N. H. Oldham.

WHITBY, GEORGE STAFFORD, Private address: 226, Rideau Terrace, Ottawa, Ontario, Canada. (Business: National Research Council, Ottawa, Canada.) British. Director, Division of Chemistry, National Research Council, Canada. A.R.C.S. (Lond.); B.Sc. (Lond.); M.Sc. (McGill); Ph.D. (McGill); F.R.S. Can., etc. Recently Professor of Organic Chemistry, McGill University, Montreal; author of about sixty articles on Chemistry. Officier d'Academie; Colwyn Gold Medallist, Institution of the Rubber Industry. *J.C.S.*, 1910, 34 (with G. T. Morgan and F. M. G. Micklethwait); 1926, 1448 (with J. Dolid and F. H. Yorstin); 1926, 1458. (*Signed by*) Frank G. Wait, Frank T. Shutt, Alfred E. Macintyre.

WILLIAMS, ALBERT LESLIE, 21, Raglan Road, Plumstead, S.E. 18. English. Student. Physico-chemical research. A.R.C.S., B.Sc. (Royal College of Science, London). (*Signed by*) H. J. T. Ellingham, James C. Philip, H. F. Harwood.

WRIGHT, JAMES MATSON, c/o Mrs. Barnfather, 7, Kempsford Gardens, S.W. 5. British. Student. B.Sc. of the London Univ.; Associate of the Royal College of Science. (*Signed by*) G. A. R. Kon, R. P. Linstead, Arnold Stevenson.

WRIGHT, NORMAN CHARLES, Hannah Dairy Research Institute, Auchincruive, Ayr. British. Director of the above Institute. M.A. (Oxford), Ph.D. (Cambridge). Previously Assistant for Research in Chemistry at the National Institute for Research in Dairying, University, Reading. Publications: "The Action of Rennet and of Heat on Milk," *Biochem. Journ.*, 1924; "The Action of Hypochlorites on Amino-acids and Proteins," *ibid.*, 1926; "Membrane Equilibria and Selective Absorption," *ibid.*, 1929, and other papers of a biochemical character. (*Signed by*) R. O. Orr McCrone, John Golding, H. A. D. Neville.

The following forms of recommendation have been authorised by the Council for presentation to ballot under Bye-Law I (2).

GAARDER, TORBJORN, Bergens Museum, Bergen, Norway. Norwegian. Director of the Biochemical Laboratory of the Bergen Museum. Dr. phil. cand. real. from the University in Oslo, Norway. Member of (1) Videnskapsakademiet in Oslo; (2) Selskapet til Videnskapernes Fremme, Bergen, (3) Norsk Kjemisk Selskap, Oslo; (4) ordinary member of Deutsche Chemische Gesellschaft, American Chemical Society. Former assistant in oceanography to the late Prof.-dr. Fr. Nansen. Has published several papers in chemical oceanography, biochemistry, physiology and agricultural chemistry. (*Signed by*) Jocelyn Thorpe.

GOLDSTEIN, HENRI. Place du Château 3, Lausanne, Switzerland. Swiss. Professor of organic chemistry at the University of Lausanne. Ingénieur-chimiste; Docteur-ès-sciences (Univ. Lausanne). Author of many papers in *Helv. Chim. Acta*: **2**, 655 (1919); **9**, 765, 772, 776, 783, 959 (1926); **10**, 332, 334, 603, 607 (1927); **11**, 245, 250, 239, 478, 486, 489 (1928); **13**, 310 (1930). (*Signed by*) C. S. Gibson.

MASCARELLI, PROF. DR. LUIGI, Istituto Universitario di Chimica, Farma-

ceutica e Tossicologica, Corso Raffaello 31, *Torino* (116). Italiano. Laurea in chimica pura (Torino); diploma in Farmacia (Bologna). Diplomato in Scienze Naturali (Torino, 1898); laureato in Chimica pura (Torino, 1900); diplomato in Farmacia (Bologna, 1904); libero docente in Chimica Generale (Bologna, 1907); professore di Chimica Farmaceutica e Tossicologica R. Univ. Cagliari (1913–1918); *id. id.*, Torino (dal, 1918); incaricato dell' insegnamento di Ch. Bromatologica. Pubblicazioni di Ch. Generale, Ch.-fisica, Ch. organica, farmaceutica, bromatologica (in *Rend. R. Acc. Lincei, Gazz. ch. it., Atti R. Acc. Scienze di Torino, Giornale di Ch. Industriale Milano, Notiziario chimico Torino, Giornale di Farmacia Torino, Enciclopedia Treccani Roma*, etc.) (*Signed by*) Prof. Dr. Mario Betti.

MOLES, ENRIQUE, Madrid, Spain. (Laboratorios de Química de la Facultad de Ciencias, S. Bernardo 49). Spanish. Professor of Physical and Inorganic Chemistry. Dr. Pharm. (Madrid, 1905); Dr. Sc. phys. (Geneva, 1916); Dr. Ciencias químicas (Madrid, 1920). President of the Span. Soc. of Chemistry and Physics; Lecturer of Inorganic Chemistry, 1910–1915 and 1918–1927 (Faculty of Pharmacy, Madrid); Lecturer of Physical Chemistry, Geneva, École de Chimie, 1916–1917; Professor of Physical and Inorganic Chemistry, Faculty of Science, Madrid, since 1927. Has published about 115 papers on stoicheiometry, solutions, molecular and atomic weights, molecular volumes (Spanish, French, German, Italian) from 1910 to date, in *An. Soc. esp. Física y Química*; *Journ. Chim. Phys.*; *Zeit. anorg. allg. Chem.*; *Zeit. phys. Chem.* (*Signed by*) Jocelyn Thorpe, C. S. Gibson.

MOUREU, HENRI, 18 rue Pierre-Curie, Paris, V^e (Collège de France, Paris, V^e). Française. Sous-Directeur du Laboratoire de Chimie Minérale du Collège de France. Docteur-es-Sciences Physiques. *J.C.S.*, 1928, 3167. (*Signed by*) C. S. Gibson.

WHITMORE, FRANK CLIFFORD, 300, South Pugh Street, State College, Pennsylvania, U.S.A. American. Dean of School of Chemistry and Physics, Pennsylvania State College. A.B., A.M., and Ph.D. from Harvard Univ. Author of "Organic Compounds of Mercury," Chemical Catalogue Company, New York, 1921, A.C.S. Monograph Series. Also author of articles on organic chemistry in *Journ. Amer. Chem. Soc.* (*Signed by*) J. C. Drummond, C. S. Gibson.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

CHADWICK, JAMES. Radioactivity and radioactive substances. 3rd edition. London 1931. pp. xii + 116. ill. 2*s.* 6*d.* net. (*Recd.* 31/12/30.) From the Publishers: Sir Isaac Pitman & Sons.

EMPIRE MARKETING BOARD. The relative values of cod liver oils from various sources. By JACK CECIL DRUMMOND and THOMAS PERCY HILDITCH. London 1930. pp. 129. 1*s.* net. (*Recd.* 13/1/31.) From Professor J. C. Drummond.

FARADAY SOCIETY. Colloid science applied to biology. A general discussion. London 1930. pp. iv, 663 to 865. ill. 12*s.* 6*d.* net. (*Recd.* 10/1/31.) From the Society.

PARTINGTON, JAMES RIDDICK. A text-book of inorganic chemistry for university students. 3rd edition. London 1930. pp. viii + 1083. ill. 15*s*. net. (*Recd*. 14/1/31.) From the Author.

—— A school course of chemistry. London 1930. pp. x + 388. ill. 4*s*. 6*d*. net. (*Recd*. 15/1/31.) From the Author.

TABLES ANNUELLES DE CONSTANTES ET DONNÉES NUMÉRIQUES. Table des Matières des Vols I à V. Années 1910 à 1922. Paris 1930. pp. lxiv + 382. (*Reference*.) 300 *fr*.

From the Comité International.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V, part vii. Berlin 1930. pp. 1349 to 1524. ill. *M*. 10. (*Recd*. 1/1/31.)

From the Publishers: Herren Urban & Schwarzenberg.

II. *By Purchase*.

BACHRACH, MAX. Fur: a practical treatise. London 1930. pp. xiv + 677. ill. 21*s*. net. (*Recd*. 15/1/31.)

BENEDICKS, CARL, and LÖFQUIST, HELGE. Non-metallic inclusions in iron and steel. London 1930. pp. xii + 311. ill. 30*s*. net. (*Recd*. 15/1/31.)

HACKNEY, NORMAN. The quantitative analysis of inorganic materials. London 1930. pp. xvi + 378. ill. 30*s*. net. (*Recd*. 15/1/31.)

HURRY, JAMIESON BOYD. The woad plant and its dye. London 1930. xxviii + 328. ill. 21*s*. net. (*Recd*. 15/1/31.)

KIESEL, ALEXANDER. Chemie des Protoplasmas. (Protoplasma Monographien.) Berlin 1930. pp. viii + 302. ill. *M*. 20. (*Recd*. 15/12/30.)

MEYER, KURT H., and MARK, HERMANN. Der Aufbau der hochpolymeren organischen Naturstoffe auf Grund molekularmorphologischer Betrachtungen. Leipzig 1930. pp. viii + 264. ill. *M*. 18. (*Recd*. 15/12/30.)

NEW INTERNATIONAL ASSOCIATION FOR THE TESTING OF MATERIALS. First Communications. Vols. I and II. Zurich 1930. pp. xvi + 368, xvi + 282. ill. (*Reference*.)

NORTH, FREDERICK JOHN. Limestones: their origins, distribution, and uses. London 1930. pp. xxiv + 467. ill. 16*s*. net (*Recd*. 15/1/31.)

OSTWALD, WILHELM. Die Maltechnik jetzt und künftig. Leipzig 1930. viii + 160. ill. *M* 8.50. (*Recd*. 15/12/30.)

PLANCK, MAX. Einführung in die Theorie der Wärme. Zum Gebrauch bei Vorträgen, sowie zum Selbstunterricht. Leipzig 1930. pp. viii + 251. ill. *M*. 10. (*Recd*. 15/12/30.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 5th, 1931, at 8 p.m., Professor T. M. LOWRY, C.B.E., D.Sc., F.R.S., in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	Died.
William Adolf Fraymouth	2nd December, 1909.	10th January.
John Alexander Hogg	1st May, 1924.	20th January.
Henry Halliburton Robinson	16th November, 1882.	11th January.
Arthur William Rogers	20th December, 1883.	16th January.
Charles Leonard Royle.....	15th December, 1901.	19th January.

The CHAIRMAN announced that the thirty-sixth General Meeting of the Deutsche Bunsen Gesellschaft für angewandte physikalische Chemie, the leading association of research workers, scientists, and technologists in the important field of applied physical Chemistry will take place from the 25th to the 27th of May, 1931, in Vienna. The subject of the symposium will be: Recent progress in the science of metallurgy with particular reference to light metals. The arrangements have been undertaken by Geheimrat Prof. Dr. Dr.-Ing. h.c. Specketer, Director of the I.G. Farbenindustrie A.-G., Managing Director of the Griesheim Elektron works.

The following were formally admitted Fellows of the Chemical Society: Messrs. F. W. Hampshire and H. J. Moss.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Henry Gibson Aitken, B.Sc., Gleneske, West Holmes Gardens, Musselburgh.
Ernest Butterworth, M.Sc.(Tech.), Rostherne, Ballymena, Co. Antrim.
Blick Crawley, M.A., A.I.C., Dobbin's Lane, Wendover.
Glyn Rees Davies, B.Sc., Ph.D., 43, St. Winifred's Road, Teddington.
Alec Edward Gawler, B.A., 12, St. George's Road, St. Margarets, Middlesex.
Arthur Kenneth Goard, M.A., Ph.D., Marlbrough College, Wilts.
Harry Fletcher Lewis, M.S., Ph.D., The Institute of Paper Chemistry, Appleton, Wisconsin, U.S.A.

John Lockhart McKee, M.Sc., 11, Atney Road, Putney, S.W.15.
Frederick John Manning, B.Sc., Pannal Ash College, Harrogate.
Joseph Marshall, D.Sc., F.I.C., 44, Priory Road, W. Bridgford, Notts.
Thomas Harold Prater, A.M.I.Chem.E., 25, Invicta Road, Margate.
Katherine Isobel Ross, B.A., B.Sc., Halkhed, Berkhamsted.
John Walter Seekings, 17, Holden Road, Beeston, Notts.
Leslie Ernest Sutton, B.A., Lincoln College, Oxford.
Robert Hugh Wilson, B.A., 53, Carlyle Road, Cambridge.
Frank Wormwell, M.Sc., 18, Elmfield Avenue, Teddington.

The following papers were read :

"Salt-forming characteristics of doubly- and singly-linked elements of the oxygen group. Part I. The carbonyl group in benzaldehyde and acetophenone." By J. W. BAKER.

"Salt-forming characteristics of doubly- and singly-linked elements of the oxygen group. Part II. The nitration of benzaldehyde and acetophenone in sulphuric acid solution." By J. W. BAKER and W. G. MOFFITT.

"The properties of the chlorides of sulphur. Part V. Metastable states." By T. M. LOWRY and G. JESSOP.

"Polycyclic aromatic hydrocarbons. Part II. The non-existence of 1 : 2 : 7 : 8-dibenzanthracene." By J. W. COOK.

"Polycyclic aromatic hydrocarbons. Part III. Derivatives of 1 : 2 : 5 : 6-dibenzanthracene." By J. W. COOK.

"Polycyclic aromatic hydrocarbons. Part IV. Condensed derivatives of 1 : 2-benzanthracene." By J. W. COOK.

Ordinary Scientific Meeting, Thursday, February 19th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Alfred Holt	Dec. 4th, 1902.	Feb. 15th.
Alfred Southall	May 6th, 1875.	Feb. 6th.

The PRESIDENT announced that the fifth general meeting of the Deutsche Gesellschaft für chemisches Apparatewesen E.V. will take place with that of the Verein deutscher Chemiker in Vienna, on the 28th and 29th May, 1931. The subject chosen for the symposium is "The Separation of Solid and Liquid Substances." Titles of communications should be sent not later than March 15th, 1931, to the head office of the Dechema, Seelze, b. Hannover.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Cecil Chapman, F.I.C., " Arran," Cuckoo Hill Road, Pinner.
Harry George Ernest Davis, M.A., Melrose, Hamworthy Junction, Dorset.
Charles Rodolphe Hall, 7, Avenue Road, South Tottenham, N. 15.
John Bramwell Miles, Ph.D., 9, Lochpark Road, Hawick.
Alfred Henry Marmaduke Purse, M.B.E., Elm Tree House, Ely Road, Llandaff, Cardiff.
Stanley Walter Read, B.Sc., A.R.C.S., 17, Seldown Lane, Poole, Dorset.

The following Forms of Recommendation have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Francis Edward Cislak, M.S., Ph.D., P.O. Box 433, Indianapolis, U.S.A.
Frederick George Germuth, B.Sc., 17, Third Avenue, Lansdowne, Maryland, U.S.A.
Joseph Rosin, B.S.Ch., M.Ph., c/o Messrs. Merck & Co., Inc., Rahway, N.J., U.S.A.
Marcel Sommelet, Prof., 4, Avenue de l'Observatoire, Paris.

Mr. L. Bains and Dr. H. L. Riley were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :—

Herbert William Ashton, B.Sc.
Maurice Brent, B.Sc., A.R.C.S.
Geoffrey Frank Carter, B.Sc., A.R.C.S.
Mahendra Harilal Desai, B.Sc.
John Dewar, B.Sc.
John Frederick James Dippy, B.Sc.
Thomas William Evans, M.I.Chem.E.
Ivy Kathleen Faith, B.Sc.
John Albert Charles Flohren, B.Sc.
Graham Edward Foster, Ph.D., A.I.C.
Torbjørn Gaarder, Dr. Phil.
Gagnon, Paul Edouard, B.A., D.-ès-Sc.
Herni Goldstein, D.-ès-Sc.
Herbert Victor Hoffman, B.Sc.
Riki Horiuchi, D.Sc.
Frederick Cecil Hymas, B.Sc., A.I.C.
Frederick William Kirkbride, B.A.
Harry Harman Kretchmar, B.Sc.
Kuruvila Ittyerah Kuriyan, B.A., M.Sc.
Ernest William Lambert, B.A.
Harold Leslie Langdon, B.Sc.
William Jefferys Lesley, M.Sc., Ph.D.
Arthur Reginald Lowe, B.Sc., A.R.C.S.
Ethel Margaret Luis, B.Sc.
Luigi Mascarelli, Prof. Dr.
Roland Rusk McLaughlin, M.A.Sc., M.A., Ph.D.
Enrique Moles, Prof. Dr.
Louis Frederic Mountfort.
Henri Moureu, D.-ès-Sc.
Phyllis Nanney, M.Sc.
Wilfred Louis Offer, B.Sc.
Edward Maurice Frederick Payne, B.A., B.Sc.
Henry Alfred Piggott.
Douglas John Cruickshank Pirie, B.Sc.
Thomas Henry Hall Quibell, B.A.
Sydney Stewart Randall, B.Sc.
Oswald Victor Richards, B.Sc.
William Frederick Sandrock, B.Sc.
Hemendra Kumar Sen, M.A., D.Sc., D.I.C.
Arthur Leonard Silcox, B.Sc.
Thomas Murray Simpson, M.Sc.
James Clare Speakman, M.Sc., Ph.D.
Reece Henry Vallance, M.Sc., F.I.C.
James Walker, B.Sc.
George Stafford Whitby, M.Sc., Ph.D., A.R.C.S.
Frank Clifford Whitmore, A.M., Ph.D.
Albert Leslie Williams, B.Sc., A.R.C.S.
James Matson Wright, B.Sc., A.R.C.S.
Norman Charles Wright, M.A., Ph.D.

The following papers were read :

"A new method for the preparation of organo-thallium halides." By F. CHALLENGER and B. PARKER.

"The dissociation of salts in nitrobenzene." By W. F. K. WYNNE-JONES.

"The formation of acyl-chloroamines from hypochlorous acid." By D. R. PRYDE and F. G. SOPER.

"The direct interchange of chlorine in the interaction of *p*-toluenesulphonamide and *N*-chloroacetanilide." By D. R. PRYDE and F. G. SOPER.

THE SECOND PEDLER LECTURE.

The Second Pedler Lecture, entitled "Studies on Biological Oxidation," will be delivered by Geh. Reg.-Rat Professor Dr. H. Wieland, in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. (by kind permission of the Council of that Institution) on Friday, March 6th, 1931, at 5.30 p.m. Tickets of admission will not be required.

90th ANNUAL GENERAL MEETING

The 90th Annual General Meeting will be held at Burlington House on Thursday, March 26th, 1931, at 4 p.m., when the President will deliver his address.

ANNIVERSARY DINNER.

The Anniversary Dinner of the Society will be held in the Grand Hall, Hotel Victoria, Northumberland Avenue, W.C. 2, on Thursday, March 26th, 1931 (the day of the Annual General Meeting), at 7 for 7.30 p.m.

The price of the tickets will be Twelve Shillings and Sixpence (12*s.* 6*d.*) each, including gratuities to waiters.

Tickets can be obtained from the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, W. 1, and a remittance for the number of tickets required, made payable to Mr. S. E. Carr, must accompany each application. Application should be made as soon as possible.

(List of papers, or abstracts thereof, received between January 15th and February 19th, 1930. This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Capillary activity in aqueous solutions." By H. Mills and P. L. Robinson.

"The configuration of the doubly-linked tervalent nitrogen atom. Part IV. The resolution of β-methyltrimethylene dithiocarbonate carboxyphenylhydrazone." By W. H. Mills and B. C. Saunders.

"Sulphuric acid-sludge disposal." By C. Hinde.

"New derivatives of *p*-arsanilic acid. Part I. Succinyl-*p*-arsanilic acid and related compounds." By G. T. Morgan and E. Walton.

"The use of the tungsten electrode in potentiometric titrations and p_H measurements." By H. T. S. Britton and E. N. Dodd.

"Studies on hydrogen cyanide. Part III. The freezing points of hydrogen cyanide–water mixtures." By J. E. Coates and N. H. Hartshorne.

"The action of amines on 2-substituted semicarbazones." By J. Chapman and F. J. Wilson.

"The reactions of nitrosulphonyl chlorides. Part II. The separation of nitrosulphonyl chlorides by means of hydrazine hydrate." By W. Davies, F. R. Storrie, and S. H. Tucker.

"The reactions of malonic esters with formaldehyde." By K. N. Welch.

"Dyes derived from acenaphthenequinone. Part I. Azine and azonium derivatives." By S. K. Guha.

"The basicity of periodic acid." By N. Rae.

"Syntheses of antiseptic derivatives of indan-1 : 3-dione. Part II. Interaction of alkylmalonyl chlorides with the methyl ether of *p*-cresol." By T. K. Walker, A. J. Suthers, L. L. Roe, and H. Shaw.

"The synthesis of coumarins. Part I. 7-Hydroxy-3-phenylcoumarin and 7-hydroxy-3-phenyl-4-methylcoumarin." By (Miss) T. de Kiewiet and H. Stephen.

"The condensation of some aromatic aldehydes with phenylacetonitrile." By (Miss) T. de Kiewiet and H. Stephen.

"Note on the preparation of 2 : 4-dimethoxyacetophenone." By (Miss) T. de Kiewiet and H. Stephen.

"The existence of solid polyiodides of potassium at 25°." By N. S. Grace.

"The interaction of sulphonates and sulphonamides with piperidine." By F. Bell.

"The solubility of water in chloroform." By C. W. Gibby and J. Hall.

"Synthesis of thioxins." By H. A. Stevenson and S. Smiles.

"Syntheses of cyclic compounds and the influence of substituent atoms, groups, and ring systems on chemical and physical properties. Part VIII. The influence of polar and other factors on ring formation and on ring stability. I. The conversion of *r*-β-methyladipic acid into *r*-3-methyl*cyclo*pentanone. II. The preparation of *r*-3-methyl*cyclo*pentane-1 : 1-diacetic acid." By A. I. VOGEL.

"Tertiary arylalkyl phosphines. Part II." By I. K. JACKSON and W. J. JONES.

"Physico-chemical studies of complex acids. Part V. The precipitation of tungstates." By H. T. S. BRITTON and W. L. GERMAN.

"The Beckmann transformation. Part I. The formation of amidines during the Beckmann transformation of ketoximes." By W. BLELOCH and H. STEPHEN.

"The Beckmann transformation. Part II. The mechanism of amidine formation." By H. STEPHEN.

"The hydrolysis of γ-ketonitriles of the type $R{\cdot}CH(CN){\cdot}CH_2{\cdot}COPh$." By (MISS) M. ROBERTSON and H. STEPHEN.

"4-Aminophthalide and some derivatives." By L. F. LEVY and H. STEPHEN.

"The melting-point curves of the monobasic fatty acids." By (MISS) A. M. KING and W. E. GARNER.

"*Cannabis Indica* resin. Part II." By R. S. CAHN.

"Potassium permanganate as a reagent for the detection of lower oxides in phosphoric acid." By J. W. SMITH.

"The position of the nitroso-group among substituents capable of activating suitably placed halogens, etc., in aromatic nuclei." By R. J. W. LE FÈVRE.

"Oxonitin." By T. A. HENRY and T. M. SHARP.

"The chlorination of iodophenols. Part IV. The action of chlorine on derivatives of *p*-iodophenol." By D. MATHESON and H. MCCOMBIE.

"The condensation of butyl chloral hydrate with aryl hydrazine." By F. D. CHATTAWAY and H. IRVING.

"Co-ordination compounds of the chloroplatinates of choline and its esters." By H. W. DUDLEY.

"A new synthesis of phthaliminoacetonitriles, and a note on aminoacetonitrile sulphates." By H. STEPHEN.

"Studies in the coumaranone series. Part III. α- and β-Naphthafuran-1-ones and their condensation products with aromatic aldedydes." By B. H. INGHAM, H. STEPHEN, and R. TIMPE.

"Note on bisacetamide hydrochloride. Its preparation and use as an acetylating reagent." By H. STEPHEN.

"Note on the preparation of 4-chlorophthalic anhydride." By H. STEPHEN.

"The preparation of methylene dimalonic ester." By K. N. WELCH.

"The conversion of 2-naphthol *iso*sulphide into 2-naphthol-1-sulphide." By L. A. WARREN and S. SMILES.

"The quantitative estimation of mixtures of isomeric unsaturated compounds. Part III. A review of the iodometric methods and a new bromometric method." By R. P. LINSTEAD and J. T. W. MANN.

"The reaction between carbon and oxygen at low pressures and room temperatures." By H. I. BULL, M. H. HALL, and W. E. GARNER.

"Quaterphenyl and the symmetrical diphenyldiphenyls." By S. T. BOWDEN.

"Piperonal-6-arsinic acid." By I. E. BALABAN.

"The reduction of potassium perrhenate." By H. V. A. BRISCOE, P. L. ROBINSON, and E. M. STODDART.

"The influence of moisture on the reaction between sulphur and silver." By J. W. SMITH.

"Studies of valency. Part XV. Absorption spectra of polyhalide ions." By F. L. GILBERT, (Mrs.) R. R. GOLDSTEIN, and T. M. LOWRY.

"The interaction of halogen-substituted *p*-tolylhydrazones with chloral." By F. D. CHATTAWAY and T. E. W. BROWNE.

"The constitution of phenolphthalein. Part III. A theory of halochromism." By H. LUND.

"Studies in chemotherapy (antimalarials). Part I." By K. S. NARANG and J. N. RÂY.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part IV. The constitution of the condensation products of diazo-compounds with β-naphthol derivatives substituted in the 1-position." By F. K. ROWE and A. T. PETERS.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part V. The 4′-nitro- and 4′-amino-derivatives of 4-methyl-3-phenylphthalaz-1-one." By F. M. ROWE, (Miss) E. LEVIN, and A. T. PETERS.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part VI. Preparation of phthalazine, phthalazone,, and phthalimidine derivatives from 2 : 6-dichloro-4-nitroaniline." By F. M. ROWE and C. DUNBAR.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part VII. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2 : 6-didromo-4-nitroaniline." By F. M. ROWE and N. H. WILLIAMS.

"The solubility of picric acid in mixed solvents. Part I. Water–alcohol and water–acetone mixtures. The effect of association on solubility." By J. C. DUFF and E. J. BILLS.

"Symmetrical triad prototropic systems. Part VII. The analogy between symmetrical triad systems and aromatic side-chain reactivity, and the effect of *p*-substitution on mobility and equilibrium in the αγ-diphenylmethyleneazomethine system." By C. W. SHOPPEE.

"Properties of the β-chlorovinylarsines and their interaction with benzene in the presence of aluminium chloride. Production of 9 : 10-dimethylanthracene." By C. S. GIBSON and J. D. A. JOHNSON.

"The thermal decomposition of methane. Part II. The homogeneous reaction." By G. C. HOLLIDAY and W. J. GOODERHAM.

"The methylation of benziminazoles." By M. A. PHILLIPS.

"The 3-fluoro-2-, -4-, and -6-amino- and -2-, -4-, and -6-halogenoanisoles." By H. H. HODGSON and J. NIXON.

"The action of piperidine on acetonesemicarbazone." By J. M. STRATTON and F. J. WILSON.

"The polysulphides of the alkali metals. Part III. Potassium." By T. G. PEARSON and P. L. ROBINSON.

"Studies in dicyclic systems. Part I. The chemistry of β-substituted *cis*- and *trans*-hexahydrohydrindenes." A. KANDIAH.

"Studies in dicyclic systems. Part II. The influence of *cis*- and *trans*-mexahydrohydrindene nuclei on the carbon tetrahedral angle." A. KANDIAH.

"The reactions of substituted ammonium aryloxides and of related compounds. Part I. The preparation and thermal decomposition of some tetra-substituted ammonium aryloxides." By (Miss) R. V. HENLEY and E. E. TURNER.

"The cinchona alkaloids and substances related to them. Introduction and Part I. Some piperidinomethylcarbinol hydrochlorides." By (MISS) R. V. HENLEY and E. E. TURNER.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BARY, PAUL. Où en est l'électrochimie? Paris 1931. pp. viii + 200. ill. 30 *fr.* (*Recd.* 26/1/31.)

From the Publishers: MM. Gauthier-Villars et Cie.

RUSSIAN PHYSICAL AND CHEMICAL SOCIETY. Journal. Vol. LXI. Leningrad 1929. (*For circulation.*) From Dr. M. Nierenstein.

[UNITED STATES] NATIONAL RESEARCH COUNCIL. Industrial research laboratories of the United States, including consulting research laboratories. 4th edition. Compiled by CLARENCE JAY WEST and CALLIE HULL. (National Research Council Bulletin No. 81.) Washington 1931. pp. 267. (*Reference.*) $2. net.
From the National Research Council.

II. *By Purchase.*

AEBY, JULES. Dangerous goods. 1st supplement. Anvers 1930. pp. 96. (*Reference.*) 12*s.* net.

BAKER, JOHN WILLIAM. Natural terpenes. London 1930. pp. x + 169. 6*s.* net. (*Recd.* 17/1/31.)

BARKER, THOMAS VIPOND. Systematic crystallography: an essay on crystal description, classification and identification. London 1930. pp. xii + 115. ill. 7*s.* 6*d.* net. (*Recd.* 17/1/31.)

BELL, [SIR WILLIAM JAMES]. Sale of food and drugs. 8th edition. By R. A. ROBINSON. London 1931. pp. xxvi + 300 + 34. 15*s.* net. (*Recd.* 19/2/31.)

BROWN, GEORGE GRANGER. The volatility of motor fuels (Univ. Michigan Engineering Research Bulletin No. 14). Ann Arbor 1930. pp. viii + 299. ill. 4*s.* 6*d.* net. (*Recd.* 17/2/31.)

CAVEN, ROBERT MARTIN, and LANDER, GEORGE DRUCE. Systematic inorganic chemistry from the standpoint of the periodic law. London 1930. pp. xviii + 510. ill. 9*s.* net. (*Recd.* 17/1/31.)

CHITTENDEN, RUSSELL HENRY. The development of physiological chemistry in the United States. (American Chemical Society Monograph Series.) New York 1930. pp. 427. 19*s.* net. (*Recd.* 19/2/31.)

EIBNER, ALEXANDER. Das Oeltrocknen ein kolloider Vorgang aus chemischen Ursachen. Berlin (1930). pp. 242. ill. *M.* 18. (*Recd.* 5/2/31.)

FEITKNECHT, WALTER. Über topochemische Umsetzungen fester Stoffe in Flüssigkeiten. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XXI.) Berlin 1930.

HARRISON, A. W. C. The manufacture of lakes and precipitated pigments. London (1930). pp. xvi + 274. ill. 15*s.* net. (*Recd.* 19/2/31.)

HOLLEMAN, ARNOLD FREDERIK. A text-book of organic chemistry. 7th English edition. New York 1930. pp. xx + 594. ill. 17*s.* 6*d.* net. (*Recd.* 17/1/31.)

MAXIMOV, N. A. A textbook of plant physiology. Edited by A. E. MURNEEK and R. B. HARVEY. New York 1930. pp. xvi + 381. ill. 20*s*. net. (*Recd.* 19/2/31.)

MELDRUM, ANDREW NORMAN. The eighteenth century revolution in science—the first phase. Calcutta 1930. pp. x + 60. 4*s*. 6*d*. net. (*Recd.* 17/1/31.)

NEWMAN, F. H. Electrolytic conduction. London 1930. pp. xii + 441. ill. 25*s*. net. (*Recd.* 19/2/31.)

OSTWALD, [WILHELM], and LUTHER, [ROBERT THOMAS DIEDRICH]. Hand- und Hilfsbuch zur Ausführung physikochemischer Messungen. 5th edition. Edited by CARL DRUCKER. Leipzig 1931. pp. xx + 979. ill. *M*. 52. (*Recd.* 3/2/31.)

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III. *Pamphlets.*

AKEN, JOHANNES STEPHANUS ANTONIUS JOSEPH MARIA VAN. Kalk-suiker. Melasseontsuikeren met kalk. Kalk-suiker als kolloïdaal systeem. Delft 1930. pp. 184. ill.

ARKEL, CORNELIA GERARDA VAN. *Oleum Jecoris Aselli cum Jodeto ferroso.* Amsterdam 1929. pp. viii + 46.

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BLUMBERGER, JOSÉ STEPHEN PETRUS. Studies in de katalytische ontleding van diazoverbindingen. Delft 1929. pp. x + 167. ill.

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—— Report on the sampling of small fuel up to 3 in. embodying some general principles of sampling. By E. S. Grumell and A. C. Dunningham. London 1930. pp. 53. ill.

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Korvezee, Antonia Elisabeth. Koperchloride als katalysator voor het Deacon-proces. Delft 1930. pp. 134. ill.

Kränzlein, Georg. Aluminiumchlorid in der organischen Chemie. (Systematische Übersicht.) Berlin 1930. pp. 47.

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—— —— Paper No. 63. The propagation of combustion in powdered coal. By HAROLD EARLE NEWALL and FRANK STURDY SINNATT. London 1930. pp. 58. ill.

MULDER, CORNELIS HARMANUS KLAAS. Arsoncarbonzuren. Groningen 1929. pp. viii + 103. ill.

READ, JOHN. Chemistry as a career. (From the *Alumnus Chronicle*, 1931.)

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SCHURINK, HENDRIK BEREND JOHANNES. Spirocyclische verbindingen. Groningen 1929. pp. viii + 188. ill.

SULLIVAN, MICHAEL XAVIER, HESS, W. C., and JONES, DAVID BREESE. Studies on the biochemistry of sulphur. IV, VI and VII. (*U.S. Public Health Reports*, 1930, Supplements Nos. 78, 82, and 86.)

TUSSENBROEK, MARINUS JOHANNES VAN. Eenige technische adsorptieprocessen en hierbij. Optredende chemische omzettingen electrische kleurmeting. Delft 1929. pp. 143. ill.

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—— —— Circular No. 139. Method and procedure of soil analysis used in the Division of Soil Chemistry and Physics. Washington 1930. pp. 19.

—— *Department of Commerce.* Bureau of Mines. Bulletin 291. Tabulated analyses of representative crude petroleums of the United States. By N. A. C. SMITH and E. C. LANE. Washington 1928. pp. ii + 69.

—— —— —— Bulletin 296. Iron oxide equilibria: a critique from the standpoint of the phase rule and thermodynamics. [By OLIVER C. RALSTON.] Washington 1929. pp. x + 326. ill.

—— —— —— Bulletin 300. Coal-washing investigations: methods and tests. By H. F. YANCEY and THOMAS FRASER. Washington 1929. pp. viii + 259. ill.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 5th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on October 5th, 1930, of Mr. Jnan Ranjan Sanyal, who was elected on December 5th, 1929.

The PRESIDENT announced that as the number of nominations did not exceed the number of vacancies on the Council, the necessity for a ballot did not arise this year.

The following nominations have been made, and the Fellows thus nominated will, in accordance with the Bye-Laws, be declared duly elected at the Annual General Meeting to be held in the Society's Rooms on Thursday, March 26th, 1931, at 4 p.m.

President: G. G. HENDERSON.

Vice-Presidents, who have filled the office of President (3 vacancies):

J. F. THORPE, H. E. ARMSTRONG.

(Become Vice-Presidents by virtue of Bye-Law VIII.)

Vice-Presidents, who have not filled the office of President (2 vacancies):

†F. A. FREETH, *R. H. PICKARD.

Ordinary Members of the Council:

Town Members (*i.e.* those resident within a radius of fifty miles from Charing Cross) (6 vacancies):

†C. R. BAILEY, *C. R. HARINGTON, †J. KENYON, †G. A. R. KON, *I. S. MACLEAN, *J. DAVIDSON PRATT.

Country Members (*i.e.* those resident beyond a radius of 50 miles from Charing Cross) (2 vacancies):

†W. N. HAWORTH, †F. M. ROWE.

The following were formally admitted Fellows of the Chemical Society: Messrs. M. Brent, H. W. Ashton, G. Maclennan, G. F. Carter, S. S. Randall, M. H. Desai, K. I. Kuriyan.

* Nominated by Council under Bye-Law VI.

† Nominated by Fellows under Bye-Law VI.

Forms of Recommendation were read for the first time in favour of :

Stephen Arnold Bryant, B.A., 8, Milwain Avenue, Wingrove, Newcastle-on-Tyne.
Moinuddin Syed Kazi, M.Sc., 112, Gower Street, W.C. 1.
Joseph Beswick Stocks, Kaladana, Kildwick Road, Crosshills, Keighley, Yorks.

The following papers were read :

"Studies of valency. Part XV. Absorption spectra of polyhalide ions." By F. L. GILBERT, MRS. R. R. GOLDSTEIN, and T. M. LOWRY.

"The reactions of substituted ammonium aryloxides and of related compounds. Part I. The preparation and thermal decomposition of some tetra-substituted ammonium aryloxides." By MISS R. V. HENLEY, and E. E. TURNER.

"A synthesis of unsymmetrical diphenyl derivatives." By J. KENNER and H. SHAW.

"Arsinic acids of the fluorene series." By G. T. MORGAN and MISS J. STEWART.

Extra Meeting held at the Institution of Mechanical Engineers on Friday, March 6th, 1931, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT called upon Geh. Reg.-Rat Professor Dr. H. Wieland to deliver the Second Pedler Lecture entitled "Studies in Biological Oxidation." At the conclusion of the lecture, a vote of thanks to Professor Wieland was proposed by Professor A. Harden. This was seconded by Professor J. C. Drummond and carried with acclamation, Professor Wieland making brief acknowledgment.

Ordinary Scientific Meeting, Thursday, March 19th, 1931, at 8 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Otto Wallach (Honorary Fellow) ...	Oct. 17th, 1929.	March 1st, 1931.
Edward E. Berry	Dec. 7th, 1882.	Jan. 29th, 1931.
James Arthur Formoy	March 4th, 1886.	March 8th, 1931.
William Houlding	March 17th, 1887.	Jan. 20th, 1930.
David Lennox	Dec. 1st, 1887.	Feb. 26th, 1931.
Kishen Lal Malhotra	Dec. 4th, 1930.	Dec. 18th, 1930.
Frederick Arnold Stead	Feb. 21st, 1924.	Oct. 8th, 1930.
John Watt	Dec. 3rd, 1908.	June 16th, 1930.

It was announced that :

1. The following had been proposed by the Council as Honorary Fellows of the Society and that a ballot for their election would be held at the next Ordinary Scientific Meeting on May 7th :

Professor F. Haber (Berlin), Professor M. Delépine (Paris), Professor R. Nasini (Pisa), Professor J. Sakurai (Tokio), and Professor F. Swarts (Ghent).

2. Professor Percy F. Frankland had presented to the Society a plaster replica of a medallion-portrait of Sir Edward Frankland, by Mr. Frank Bowcher, which had been executed for the Sir Edward Frankland Medal awarded annually by the Institute of Chemistry.

The following were formally admitted Fellows of the Chemical Society : Messrs. James M. Wright, Arthur R. Lowe, and H. K. Sen.

Certificates were read for the first time in favour of :

George Christopher Clayton, C.B.E., Ph.D., F.I.C., Crabwall Hall, Chester.
Kenneth John Cable McLennan, 16, Ashburnham Gardens, Upminster.
John Edwin Oakley Mayne, B.Sc., A.R.C.S., 21, Lansdowne Road, Luton.
Durgadas Mitrá, B.Sc., M.B., 77*a*, Pataldanga Street, Calcutta.
Adam Taylor, 16, Woodcroft Avenue, Broomhill, Glasgow.

The following forms of recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Hilmi Isaac Said, B.Sc., Abbassieh Secondary School, Alexandria, Egypt.
Fidel Enrique Raurich Sas, Lagasca 97, Madrid.

The following papers were read :

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part IV. The constitution of the condensation products of the diazo-compounds with β-naphthol derivatives substituted in the 1-position." By F. M. Rowe and A. T. Peters.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part V. The 4′-nitro- and 4′-amino-derivatives of 4-methyl-3-phenylphthalaz-1-one." By F. M. Rowe, (Miss) E. Levin, and A. T. Peters.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part VI. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2 : 6-dichloro-4-nitroaniline." By F. M. Rowe and C. Dunbar.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part VII. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2 : 6-dibromo-4-nitroaniline." By F. M. Rowe and N. H. Williams.

"Strychnine and brucine. Part XII. The constitution of dinitrostrycholcarboxylic acid." By K. N. MENON and R. ROBINSON.

"The cinchona alkaloids and substances related to them. Introduction and Part I. Some piperidinomethylcarbinol hydrochlorides." By (Miss) R. V. HENLEY and E. E. TURNER.

"The optical resolution of 3 : 5-dinitro-6-α-naphthylbenzoic acid." By (Miss) M. S. LESSLIE and E. E. TURNER.

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Monday, June 1st, 1931. Applications from Fellows will receive prior consideration.

All persons who received grants in June 1930, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 1st.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

List of Papers, or Abstracts thereof, received between February 19th and March 19th, 1931. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Studies in dicyclic systems. Part I. The chemistry of β-substituted *cis*- and *trans*-hexahydrohydrindenes." By A. KANDIAH.

"Studies in dicyclic systems. Part II. The influence of *cis*- and *trans*-hexahydrohydrindene nuclei on the carbon tetrahedral angle." By A. KANDIAH.

"Optical activity and the polarity of substituent groups. Part XVII. *l*-Menthyl hydrogen naphthalate, its alkali salts and methyl ester." By H. G. RULE and A. MCLEAN.

"Optical activity and the polarity of substituent groups. Part XVIII. Influence of polar solvents on the rotatory power of methyl *l*-menthyl naphthalate." By H. G. RULE and A. MCLEAN.

"Explosions in closed cylinders. Part IV. Correlation of flame-movement and pressure development in methane–air explosions." By W. A. KIRKBY and R. V. WHEELER.

"Ionisation in gaseous explosions. Part I. Experimental method. Part II. The relation between ionisation and after-burning." By W. A. KIRKBY.

"Synthetical experiments in the chromone group. Part II. Naphthapyrones." By A. S. BHULLAR and K. VENKATARAMAN.

"The stereoisomeric 2 : 3 : 5 : 6-tetramethylpiperazines. Part II. The configuration of the so-called β-isomeride." By F. B. KIPPING.

"Mobile anion tautomerism. Part VI. The activation of the three-carbon anionotropic system by polynuclear aryl groups." By H. BURTON.

"Studies in the composition of coal. The soluble constituents of coals and their 'rank.'" By C. COCKRAM and R. V. WHEELER.

"The chemistry of alkyl*cyclo*pentanones. Part I. Derivatives of *r*-3-methyl*cyclo*pentanone." By R. D. DESAI.

"The use of 2 : 4-dinitrophenylhydrazine as a reagent for carbonyl compounds." By O. L. BRADY.

"The nitrosation of phenols. Part XI. The constitution of 3-chloro-4-nitrosophenol." By H. H. HODGSON.

"Dealkylation of phenolic ethers by pyridine and piperidine." By R. S. CAHN.

"Higher aliphatic compounds. Part I. The systems ethyl palmitate–ethyl stearate and hexadecyl alcohol–octadecyl alcohol." By J. C. SMITH.

"Thioquinols." By L. A. WARREN and S. SMILES.

"The reduction products of certain cyclic methylene amines." By J. GRAYMORE.

"The methylurethanes of α-4-methoxy-3-hydroxyphenylethyldimethylamine and α-3-methoxy-4-hydroxyphenylethyldimethylamine and their miotic activities." By E. STEDMAN and (MRS.) E. STEDMAN.

"Polysaccharides. Part VI. Trimethyl cellulose." By W. N. HAWORTH, E. L. HIRST, and H. A. THOMAS.

"Polysaccharides. Part VII. Isolation of octamethyl cellobiose, hendecamethyl cellotriose, and a methylated cellodextrin (cellotetrose?) as crystalline products of the acetolysis of trimethyl cellulose." By W. N. HAWORTH, E. L. HIRST, and H. A. THOMAS.

"The parachor of tervalent iodine." By N. V. SIDGWICK and E. D. P. BARKWORTH.

"Triazole compounds. Part IV. The constitution of the methyl-1 : 2 : 3-benztriazole *N*-oxides and the action of methyl sulphate on nitro-1-hydroxy-1 : 2 : 3-benztriazoles." By O. L. Brady and C. V. Reynolds.

"The distribution of saturated and unsaturated higher fatty acids in mixed synthetic glycol esters." By R. Bhattacharya and T. P. Hilditch.

"Note on the nitration of benzylpiperidine." By R. Robinson and J. S. Watt.

"The dissociation constants of organic acids. Part III. The routine preparation of 'equilibrium' water and of moderate grade conductivity water." By A. I. Vogel and (in part) G. H. Jeffery.

"The structure of glucal." By E. L. Hirst and C. S. Woolvin.

"The use of arylcarbimides in identifying hydroxylic compounds." By G. T. Morgan and A. E. J. Pettet.

"The nitration of brominated 3-hydroxybenzaldehydes and the bromination of nitrated 3-hydroxybenzaldehydes with cases of group migration." By H. H. Hodgson and E. W. Smith.

"Hydroxy-carbonyl compounds. Part I. A synthesis of scopoletin." By F. S. H. Head and A. Robertson.

"Hydroxy-carbonyl compounds. Part II. The benzoylation of ketones derived from phloroglucinol." By F. W. Canter, F. H. Curd, and A. Robertson.

"Hydroxy-carbonyl compounds. Part III. The preparation of coumarins and benzo-1 : 4-pyrones from phloroglucinol and resorcinol." By F. W. Canter, F. H. Curd, and A. Robertson.

"Identification of the supposed 3 : 4-benzphenanthrene." By J. W. Cook.

"The reaction between thallic chloride and potassium thiocyanate." By I. K. Taimni.

"The estimation of phosphorus in organic compounds." By W. C. Davies and D. R. Davies.

"The solution tension of sodium in solvents other than water." By F. K. V. Koch.

"An electrochemical method for the approximate determination of the constitution of complexes in solution. Application to some complex copper and complex nickel ions." By F. K. V. Koch.

"The nitration of 2 : 4 : 6-trimethylbenzaldehyde." By L. E. Hinkel, E. E. Ayling, and W. H. Morgan.

"The catalytic production of polynuclear compounds. Part II." By G. R. Clemo, J. G. Cockburn, and R. Spence.

"The translation motion of molecules in the adsorbed phase on solids." By D. H. Bangham and N. Fakhoury.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 7th, 1931.

AITKEN, HENRY GIBSON, Gleneske, West Holmes Gardens, Musselburgh, Scotland. British. Teacher of Science (Chemistry). B.Sc. (2nd Class Hons., Edin. 1927). Have given many public lectures on popular chemistry, and at present am engaged on a study of tautomerism (keto → enolic). (*Signed by*) James Walker, H. G. Rule, Ernest B. Ludlam.

BRYANT, STEPHEN ARNOLD, 8, Milwain Avenue, Wingrove, Newcastle-on-Tyne. English. Demonstrator. B.A. (Oxford). (With S. G. P. Plant) paper on "The Action of Nitric Acid on Polycyclic Indole Derivatives, Part IX," *J.C.S.*, 1931, 93. (*Signed by*) G. R. Clemo, R. D. Haworth, Richard Raper, Grace C. Leitch.

BUTTERWORTH, ERNEST, Rostherne, Ballymena, Co. Antrim. British. Head of Research Dept. B.Sc. (Hons.) (Vict.), M.Sc. (Tech.) (Vict.). Asst., Research Dept., Messrs. Tootal, Broadhurst, Lee Co., Ltd., 1922–27. Head of Colloid Dept., The Linen Industry Research Assoc., 1927–30. Research Manager, Messrs. Frazer & Haughton, Ltd., 1930 to date. (*Signed by*) W. Honneyman, J. Carroll Culbert, W. H. Gibson.

CHAPMAN, CECIL, "Arran," Cuckoo Hill Road, Pinner, Middlesex. British. Chemist (Technical Adviser). F.I.C. "Notes on Vertical Retort Tar," Manchester Tar Conference, 1926, *J. Soc. Chem. Ind.*; "Storage of Sulphate of Ammonia," *Gas Journal*, 1927. (*Signed by*) R. Leslie Collett, J. Davidson Pratt, R. Murdin Drake.

CRAWLEY, BLICK, Dobbin's Lane, Wendover, Bucks. English. Chemist. M.A. (Oxon.), A.I.C. Formerly natural science scholar of Balliol College, Oxford. Research laboratory, Gas Light & Coke Company, since 1929. (*Signed by*) Francis H. Carr, C. N. Hinshelwood, Arthur Smithells.

DAVIES, GLYN REES, 43, St. Winifred's Road, Teddington, Middlesex. British. Research Chemist. B.Sc. (London), Ph.D. (Birmingham). Papers on Antimonials (with Prof. G. T. Morgan), *Proc. Roy. Soc.*, 1926, **A, 110**, 623; *ibid.*, 1930, **A, 127**, 1. "Diazo-derivatives of Mesitylene," *J.C.S.*, 1923, **123**, 228 (with G. T. Morgan, F.R.S.). (*Signed by*) G. T. Morgan, R. Taylor, D. D. Pratt.

DAVIS, HARRY GEORGE ERNEST, Melrose, Hamworthy Junction, Dorset. British. Schoolmaster. Senior Science Master, Poole Grammar School. M.A. (Cantab.). (*Signed by*) H. A. D. Jowett, Sydney Smith, C. S. Gibson.

GAWLER, ALEC EDWARD, 12, St. George's Road, St. Margarets, Middlesex. British. Secretary, Magadi Soda Co., Ltd. B.A. (Cambridge). (*Signed by*) L. J. Barley, F. A. Freeth, R. A. Punter.

GOARD, ARTHUR KENNETH, Marlborough College, Wilts. British. Schoolmaster. M.A. (Cantab.), Ph.D. (Cantab.). Papers: "Measurement of Potentials" (Goard and Rideal), *Trans. Faraday Soc.*, XIX. 1924; "Catalytic and Induced Reactions" (Goard and Rideal), *Proc. Roy. Soc.*, 1924, **A, 105**, 135, and 148. In *J.C.S.* (see below). Sublector, Trinity College, Cambridge, 1923–25; Demonstrator, Chemical Laboratories, Cambridge, 1922–25. At present Head of Science Department, Marlborough College. "Surface Tensions of Aqueous Phenol Solutions" (Goard and Rideal), Part I, *J.C.S.*, 1925, **127**, 780; Part II, *ibid.*, 1668; "Negative Adsorption" (Goard), *ibid.*, 361. (*Signed by*) T. M. Lowry, Eric K. Rideal, R. G. W. Norrish.

HALL, CHARLES RODOLPHE, 7, Avenue Road, South Tottenham, N. 15. English. Headmaster of St. Ann's Boys' School, South Tottenham, N. 15. Science Master, St. Ann's Boys' School, N. 15, 1904–22. Student of chemical science. Am desirous of keeping in touch with modern advances in chemical knowledge. (*Signed by*) George Fowles, George J. Francis, Chas. W. Truelove.

KAZI, MOINUDDIN SYED, 112, Gower Street, W.C. 1. Indian. Research Student (Organic Chemistry), University College, London. B.Sc. (Bombay), M.Sc. (Osmania University, Hyderabad Deccan). (*Signed by*) C. K. Ingold, R. J. W. Le Fèvre, S. Anwar Ullah.

LEWIS, HARRY FLETCHER, The Institute of Paper Chemistry, Appleton, Wisconsin, U.S.A. American. Professor of Organic Chemistry. B.S., M.S., Wesleyan University (Conn.); Ph.D., Illinois University. Colour Investigation Laboratory, Washington, D.C., 1917–18; Assoc. Professor of Chemistry, University of Maine, 1918–19; Research Chemist, National Aniline and Chemical Company, Buffalo, New York, 1919–21; Professor of Chemistry, Cornell College (Iowa), 1921–28; Professor of Chemistry, Ohio Wesleyan University, 1928–30; Professor of Organic Chemistry, Institute of Paper Chemistry, Appleton, Wisconsin, 1930 to date. (*Signed by*) W. A. Hamor, H. T. Clarke, M. L. Crossley.

MCKEE, JOHN LOCKHART, 11, Atney Road, Putney, S.W. 15. British. Research Student. M.Sc. (Queen's University of Belfast). After the usual 3 yrs. course, graduated B.Sc. with 1st Class Hons. in Chemistry at Queen's University of Belfast in June 1929, and M.Sc. in June 1930 after 1 year's research at Belfast in organic chemistry. Now researching on the chemical constitution of coal under the direction of Prof. W. A. Bone, F.R.S., at Imperial College, London. (*Signed by*) William A. Bone, Frank Bryans, L. G. Brett Parsons.

MANNING, FREDERICK JOHN, Pannal Ash College, Harrogate, Yorks. English. Science Master. B.Sc., Hons. Physics, Manchester (Subsidiary Chemistry). Teaching chemistry to Open Scholarship Standard. (*Signed by*) Arthur Lapworth, Colin Campbell, G. N. Burkhardt.

MARSHALL, JOSEPH, 44, Priory Road, W. Bridgford, Notts. British. Research Chemist. D.Sc. (Leeds) (1918), F.I.C. (1919). Student at Yorkshire College, 1901–5; Research Student at Munich University, 1905–7; Demonstrator in Organic Chemistry, Leeds University, 1907–16; Research Chemist, Boots Pure Drug Co., Ltd., Nottingham, 1916 to date. *J.C.S.*, 1914, 527; 1915, 509; 1925, 2185, and several papers in collaboration with others. (*Signed by*) Frank Lee Pyman, H. B. Holthouse, Robert Forsyth.

MILES, JOHN BRAMWELL, 9, Lochpark Road, Hawick, Scotland. Scottish. Student in Edinburgh Provincial Training College for Teachers. B.Sc., Ph.D. (Edin.). 5 Years' training in chemistry for B.Sc. degree (1922–27); 2½ years' research experience in organo-physical chemistry (paper below); 4 months as an Asst. Chemist in The Rowett Research Institute, Bucksburn, Aberdeenshire. *J.C.S.*, 1929, 2274 (part). (*Signed by*) H. G. Rule, James Kendall, Ernest B. Ludlam, J. A. V. Butler, Sydney A. Kay.

PRATER, THOMAS HAROLD, 25, Invicta Road, Margate, Kent. British. Chartered Gas Engineer. M.I.GasE. (by Diploma). Thesis published in 1924–25 Transactions. A.M.I.Chem.E., Member Inst. of Fuel, Member Society Chemical Industry, President of London and Southern District Junior Gas Association, 1930–31. (*Signed by*) G. Warburton, Ernest M. Hawkins, Fred C. Smith.

PURSE, ALFRED HENRY MARMADUKE, M.B.E., Elm Tree House, Ely Road, Llandaff, Cardiff. British. Pharmacist Superintendent, N.H.I. Prescription Establishment (Wales). Pharmaceutical Adviser to Welsh National

Memorial Association in connection with Drug Supplies to their Hospitals and Sanatoria. Qualified Pharmacist (London). Late Senior Assistant at Messrs. Squires (Sir P. W. Squire, Oxford St., Chemist on the establishment of H.M. the King), where a fair amount of chemico-pharmaceutical research was done and analytical work. Responsible for the compilation of N.H.I. Medical Formulary used by all panel medical practitioners and chemists in Wales and Monmouthshire. Chemist to the Committee now compiling the Welsh National Medical Association Pharmacopœia for use in their Hospitals and Sanatoria. Closely associated with Mr. H. J. Evans, B.Sc., F.I.C., F.C.S., in the scheme for testing medicines supplied to insured persons in Wales and Monmouthshire. M.B.E. conferred by H.M. the King last year in recognition of services to Health Insurance (Ministry of Health). (*Signed by*) H. J. Evans, James Smith, C. Durham Garbutt.

READ, STANLEY WALTER, 17, Seldown Lane, Poole, Dorset. English. Research Student (Physical Chemistry). B.Sc. (Hons.), A.R.C.S. (Royal College of Science). (*Signed by*) James C. Philip, R. H. Purcell, H. L. Riley.

ROSS, KATHERINE ISOBEL, Halkhed, Berkhamsted, Herts. British. Demonstrator and Assistant Lecturer, Royal Holloway College (in Chemistry). B.A., B.Sc. (Oxon.). Research on aporphine alkaloids with Dr. J. M. Gulland (unpublished). (*Signed by*) T. G. Moore, M. Boyle, J. Masson Gulland.

SEEKINGS, JOHN WALTER, "Ingleneuk," 17, Holden Road, Beeston, Notts. British. Wholesale and Export Dept. of Fine Chemical Manufacturers. Member of Pharmaceutical Society, 1921; for several years associated with British Fine Chemicals, Research Chemicals, Dye Intermediates, etc. Desirous of having access to Society's Library and Publications, thus keeping in touch with latest advances in chemistry. (*Signed by*) John Wicliffe Peck, Charles A. Allgood, Frederick Hayter, G. Baty Scott.

STOCKS, JOSEPH BESWICK, Kaladana, Kildwick Road, Crosshills, via Keighley, Yorks. English. Chemist and Pharmacist. M.P.S. (Edinburgh Branch of Pharmaceutical Soc. of Gt. Britain); Student of Bradford Grammar School and Bradford Technical College with Lond. Matric. from former and Inter. B.Sc. course and M.P.S. from latter. Later Analytical Chemist to The Yorkshire Sugar Co., Selby. (*Signed by*) Wilfred H. Linnell, Eric F. Hersant, Jerry Robertson.

SUTTON, LESLIE ERNEST, Lincoln College, Oxford. British. Research Student. B.A., University of Oxford. *J.C.S.*, 1930, pp. 1323, 1461, 1876. (*Signed by*) N. V. Sidgwick, Robert Robinson, D. Ll. Hammick, T. W. J. Taylor.

WILSON, ROBERT HUGH, 53, Carlyle Road, Cambridge. British. Research Student. B.A., Cambridge. (*Signed by*) W. H. Mills, F. H. Brain, W. G. Palmer.

WORMWELL, FRANK, Tudor Cottage, 18, Elmfield Avenue, Teddington, Middlesex. British. Research Chemist. B.Sc., 1st Class Hons. Chemistry; M.Sc. (Manchester); B.Sc., 2nd Class Hons. Chemistry (London External). 2 Years' research at Manchester University. For the past 2 years engaged in research on the corrosion of metals at the Chemical Research Laboratory, Teddington. Fairbrother and Wormwell, *J.C.S.*, 1928, 1991; Stuart and Wormwell, *ibid.*, 1930, 85. (*Signed by*) Guy D. Bengough, W. H. J. Vernon, G. T. Morgan, D. D. Pratt.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2):

CISLAK, FRANCIS EDWARD, The Reilly Chemical Company, P.O. Box 433, Indianapolis, Ind., U.S.A. American. Research Chemist and Teacher. B.S., University of Chicago, 1925; M.S., University of Chicago, 1926; Ph.D., North-western University, 1929. "Reduction of 2-Nitrofluorene," Cislak, Eastman, and Senior, *J.A.C.S.*, 1927, **49**, 2318; "Method of Determining Arsenic Content of Organic Arsenicals," Cislak and Hamilton, *ibid.*, 1930, **52**, 638; "Some Arsonic Acids of Fluorene and its Derivatives," Cislak and Hamilton, *ibid.*, **53**, Jan. or Feb. (1931) (to be published). Director of Organic Research Division, The Reilly Chemical Co., Indianapolis, Ind., U.S.A. Lecturer in Chemistry, Butler University, Indianapolis, Ind., U.S.A. (*Signed by*) Jocelyn Thorpe.

GERMUTH, FREDERICK GEORGE, 117, Third Avenue, Lansdowne, Maryland, U.S.A. American. Research Chemist. Head, Division of Research, Municipal Bureau of Standards. City of Baltimore. Blue Ridge College, 1914, B.Sc. in Chemistry. Johns Hopkins University, 1921–23. University of Maryland, 1924–25 (equivalent to Ph.D.). Author of 35 published researches in medicinal, biological, organic, and analytical chemistry, appearing in *Ind. Eng. Chem.*, *J.A.C.S.*, *J. Amer. Pharm. Assoc.*, *Indian Med. Gaz.*, *Amer. J. Pharm.*, etc. (1925 to date). Abstractor: Chemical Abstracts and Biological Abstracts. Consulting Chemist. Member, American Chem. Soc., A.A.A.S., Maryland Academy of Sciences, Franklin Institute of Pennsylvania. Original investigations on hæmatoporphyrin production induced by hypnotics of the sulfone series (*Amer. J. Pharm.*, *J. Amer. Pharm. Assoc.*). Honorary Member, American International Academy. (*Signed by*) Maximilian Toch, H. V. Arny.

ROSIN, JOSEPH, c/o Merck & Co., Inc., Rahway, N.J., U.S.A. American. Chemist. B.S., Ch., University of Pennsylvania; M.Ph., Philadelphia College of Pharmacy and Science (Honorary). Have been Chief Chemist, Powers-Weightman-Rosengarten Co., Manufacturing Chemists, Philadelphia. Now Chemical Director and Vice-President of Merck & Co., Inc., Rahway, N.J. Author of a paper on "The Determination of Phosphoric Acid," *Journ. Amer. Chem. Soc.*, July 1911, p. 1099. Also published several papers on other analytical subjects in the *Journ. Amer. Pharm. Assoc.* Co-author (with Dr. W. Schnellbach) of two papers on Solubility of U.S.P. Chemicals, published in the *Journ. Amer. Pharm. Assoc.*, Vol. 18, pp. 762–71 (August 1929), *ibid.*, pp. 1230–35 (December 1929). (*Signed by*) H. V. Arny.

SAID, HILMI ISAAC, Abbassieh Govt. Secondary School, Alexandria, Egypt. Egyptian. Teacher of Chemistry, Abbassieh Govt. Sec. School, Alexandria. B.Sc. with Honours (Chemistry), Bristol, England. I want to keep in touch with the progress of Chemistry. (*Signed by*) A. K. Wahbi, A. H. Ahmad.

SAS, FIDEL-ENRIQUE RAURICH, Madrid, Lagasca-97, entr. drcha. Spanish. Professor Analyt. Chemistry. Dr. of Pharmacy (Faculty of Madrid, 1919). Lecturer of Inorganic Chemistry, 1919–1925 (Faculty of Pharmacy, Barcelona). Professor of Analyt. Chemistry, 1925–1928 (Faculty of Pharmacy, Santiago de Compostela). Chemist of the "Instituto Técnico de Comprobación," Madrid. Assistant of Inorganic Chemistry, 1931 (Faculty of Pharmacy, Madrid). Has published seven papers on Analysis of Medicaments from 1924 to date, in *An. Soc. esp. Físico y Química*. (*Signed by*) E. Moles.

SOMMELET, MARCEL, 4, Avenue de l'Observatoire, Paris, VI^{e}. Français. Professeur à la Faculté de Pharmacie; Docteur-ès-Sciences (Paris); Pharmacien. Nombreuses publications aux Comptes Rendus de l'Académie des Sciences de Paris et au Bulletin de la Société chimique de France. (*Signed by*) Jocelyn Thorpe, C. S. Gibson.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BARR, GUY. A monograph of viscometry. London 1931. pp. xiv + 318. ill. 30*s*. net. (*Recd.* 26/2/31.)
From the Publisher: Mr. Humphrey Milford.

BRANDÃO, ALVARO SOARES. Trabalhos praticos de chimica. S. Paulo (1930). pp. 314. ill. (*Recd.* 17/3/31.)
From the Author.

GILDEMEISTER, EDUARD, and HOFFMANN, FRIEDRICH. Die ätherischen Öle. 3rd edition. Vol. III and Register. Miltitz bei Leipzig 1931. pp. xxxii + 1072. 124. ill. (*Recd.* 19/2/31.)
From the Publishers: Herren Schimmel & Co.

[HOPKIN & WILLIAMS, LTD.] Analytical reagents, standards and tests. London 1931. pp. xii + 135. ill. (*Reference.*)
From Messrs. Baird & Tatlock.

MULLER, ERICH. A laboratory manual of electrochemistry. Translated from the 4th edition by HARRY JOHANN THOMAS ELLINGHAM. London 1931. pp. xiv + 363. ill. 15*s*. net. (*Recd.* 13/3/31.) From the Publishers: Messrs. George Routledge & Sons.

ONSLOW, MURIEL WHELDALE. The principles of plant biochemistry. Part I. Cambridge 1931. pp. viii + 326. ill. 16*s*. net. (*Recd.* 2/3/31.)
From the Syndics of the Cambridge University Press.

SIMONSEN, JOHN LIONEL. The terpenes. Vol. I. The simpler acyclic and monocyclic terpenes and their derivatives. Cambridge 1931. pp. xvi + 420. 25*s*. net. (*Recd.* 17/3/31.)
From the Syndics of the Cambridge University Press.

VOGEL, HANS, and GEORG, ALFRED. Tabellen der Zucker und ihrer Derivate. Berlin 1931. pp. xii + 663. (*Reference.*) *M*. 120.
From Professor W. N. Haworth, F.R.S.

WILSON, WILLIAM. Theoretical physics. Vol. I. Mechanics and heat. Newton–Carnot. London 1931. pp. x + 332. ill. 21*s*. net. (*Recd.* 9/3/31.)
From the Publishers: Messrs. Methuen & Co.

II. *By Purchase.*

BECKURTS, HEINRICH. Die Methoden der Massanalyse. 2nd edition. Edited by RICHARD BERG and RICHARD DIETZEL. Braunschweig 1931. pp. x + 730. ill. *M*. 56. (*Recd.* 19/3/31.)

BORGSTROM, PARRY, BOST, R. W., and BROWN, D. F. Bibliography of organic sulfur compounds (1871—1929). pp. vi + 187. (*Reference.*) 18*s*. net.

CHEMISCH-TECHNISCHE REICHSANSTALT. Jahresbericht VIII, 1929, etc. Berlin 1930 +. (*Reference.*)

ELLIS, CARLETON. Hydrogenation of organic substances including fats and fuels. 3rd edition. New York 1930. pp. xxiv + 986. ill. 70*s.* net. (*Recd.* 19/3/31.)

FEIGL, FRITZ. Qualitative Analyse mit Hilfe von Tüpfelreaktionen. Theoretische Grundlagen und praktische Ausführung. Leipzig 1931. pp. xii + 387. ill. *M.* 28. (*Recd.* 2/3/31.)

FINDLAY, ALEXANDER. Practical physical chemistry. 5th edition. London 1931. pp. xii + 312. ill. 7*s.* 6*d.* net. (*Recd.* 24/2/31.)

FRIEND, JOHN NEWTON. A text-book of inorganic chemistry. Vol. VII. Part ii. Sulphur, selenium and tellurium. By REECE HENRY VALLANCE, DOUGLAS FRANK TWISS, and ANNIE ROBERTS RUSSELL. London 1931. pp. xxviii + 420. ill. 25*s.* net. (Two copies.)

HELLER, GUSTAV. Über Isatin, Isatyd, Dioxindol und Indophenin. (Sammlung, New Series. Vol. I.) Stuttgart 1931. pp. 173. (*Reference.*)

HOLTZ, JOHN CROMWELL. The origin and decomposition of organic sulfur compounds under gas making conditions with particular reference to the role of the carbon-sulfur complex. Baltimore 1930. pp. iv + 83. ill. 4*s.* 6*d.* net. (*Recd.* 9/3/31.)

METZGER, HANS. Starrpunkt und Viskosität bituminöser Stoffe. Halle (Saale) 1930. pp. viii + 59. ill. *M.* 7. (*Recd.* 5/3/31.)

PIRANI, MARCELLO VON. [Editor.] Elektrothermie. Die elektrische Erzeugung und technische Verwendung hoher Temperaturen. Berlin 1930. pp. viii + 293. ill. *M.* 36. (*Recd.* 19/3/31.)

PLÜCKER, WILHELM. Tabellen- und Rechenbuch für Nahrungsmittelchemiker. Berlin 1931. pp. iv + 231. *M.* 22. (*Recd.* 19/3/31.)

—— Untersuchung der Nahrungs- und Genussmittel. Allgemeine Methoden. Berlin 1931. pp. xii + 1046. ill. *M.* 59. (*Recd.* 19/3/31.)

RIECHE, ALFRED. Alkylperoxyde und Ozonide. Studien über peroxydischen Sauerstoff. Dresden 1931. pp. viii + 172. ill. *M.* 10. (*Recd.* 2/3/31.)

STERNER-RAINER, LUDWIG. Die Edelmetall-Legierungen in Industrie und Gewerbe. Leipzig 1930. pp. 154. ill. *M.* 8·75. (*Recd.* 2/3/31.)

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

ANNIVERSARY DINNER.

The Anniversary Dinner was held in the Grand Hall of the Hotel Victoria, Northumberland Avenue, W.C. 2, on Thursday, March 26th, 1931, at 7.30 p.m. The President, Professor G. G. Henderson, M.A., D.Sc., F.R.S., was in the Chair, and the company numbered 212. The foreign guests present were Professor J. A. de Artigas (Presidente of the Federación Española de Sociedades Química), Professor Einar Biilman (President, Union Internationale de Chimie), Professor Ernst Cohen (Utrecht University), Professor M. Delépine (Président, La Société Chimique de France), and Professor F. Swarts (Ghent University). Among other guests present were the Rt. Hon. Lord Blanesburgh, G.B.E., Mr. J. H. Nelson-Curtis (Prime Warden, The Dyers Company), Dr. E. F. Armstrong (Chairman, The Association of British Chemical Manufacturers), Mr. W. A. S. Calder (President, The Institution of Chemical Engineers), Lt.-Col. E. Kitson Clark (President, The Institution of Mechanical Engineers), Dr. G. C. Clayton (President, The Institute of Chemistry), Dr. J. T. Dunn (President, The Society of Public Analysts), Dr. A. E. Dunstan (President, The Institution of Petroleum Technologists), Mr. Cyril Eastman (President, The Society of Dyers and Colourists), Mr. Percy Gates (President, The Institute of Brewing), Mr. Noel Heaton (President, Oil and Colour Chemists' Association), Dr. T. A. Henry (Chairman of Executive Committee, Biochemical Society), Professor J. G. Lawn (President, The Institution of Mining and Metallurgy), Dr. H. Levinstein (Chairman of Council, The Society of Chemical Industry), Mr. Eric Macfadyen (President, The Institution of the Rubber Industry), Sir David Milne-Watson (President, The Institute of Fuel), Mr. H. Eustace Mitton (President, The Institution of Mining Engineers), Sir William J. Pope, F.R.S. (President, The Federal Council for Chemistry), and Dr. R. Seligman (President, The Institute of Metals).

The following Toasts were proposed :

1. The King.

2. The Queen, The Prince of Wales, and the other Members of the Royal Family.

By the Right Honourable Lord Blanesburgh, G.B.E.

3. "The Chemical Society," coupled with the name of the President.

By Sir William J. Pope, K.B.E., D.Sc., F.R.S., Past-President.

4. "The Guests," coupled with the names of :

(*a*) Professor Dr. Ernst Cohen, For.Mem.R.S.

(*b*) Professor Marcel Delépine, Président, La Société Chimique de France.

(*c*) W. A. S. Calder, Esq., F.I.C., President of the Institution of Chemical Engineers.

Professor J. A. de Artigas, Presidente of the Federación Española de Sociedades Química, also spoke at the invitation of the President.

Ordinary Scientific Meeting, Thursday, May 7th, 1931, at 8 p.m., Professor JAMES C. PHILIP, O.B.E., D.Sc., F.R.S., in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Thomas Vipond Barker	Dec. 3rd, 1903.	April 15th, 1931.
Rowland Lewis Goold	June 15th, 1911.	April 23rd, 1931.
Thornton Charles Lamb	Dec. 15th, 1892.	Mar. 21st, 1931.
Robert Law	Feb. 6th, 1890.	July 22nd, 1930.
John Albert Miller	Dec. 1st, 1887.	Jan. 13th, 1931.
Henry William Potts	Dec. 3rd, 1896.	Feb. 10th, 1931.
Thomas Rigby	Dec. 7th, 1905.	July 15th, 1929.
Thomas Harrison Winstanley...	May 15th, 1913.	June 22nd, 1930.
Lewis Thompson Wright	Feb. 21st, 1878.	April 29th, 1931.

It was announced that the Second International Congress of the History of Science and Technology would be held from June 29th to July 3rd, 1931, and that the Headquarters would be at the Science Museum, South Kensington, S.W. 7. The present Congress will comprise morning sessions for papers and discussions, which will centre round the three following themes :

1. The sciences as an integral part of general historical study.

2. Historical and contemporary inter-relationship of the physical and biological sciences.

3. Inter-dependence of pure and applied science.

Visits to places of historical and scientific interest will be arranged for the afternoons, and receptions will be held during the evenings. Full particulars can be obtained from the Hon. Secretary at Headquarters.

Dr. L. Hunter and Dr. R. G. W. Norrish were elected Scrutators, and a ballot for the election of Honorary Fellows was held. The following were declared elected :

Geh. Reg.-Rat. Professor Dr. Fritz Haber (Berlin).
Professor Marcel Delépine (Paris).
Professor Joji Sakurai (Tokio).
Professor Fréd. Swarts (Ghent).

A ballot for the election of Fellows was also held, and the following were declared elected :

Henry Gibson Aitken, B.Sc.
Stephen Arnold Bryant, B.A.
Ernest Butterworth, B.Sc., M.Sc.Tech.
Cecil Chapman, F.I.C.
Francis Edward Cislak, M.S., Ph.D.
Blick Crawley, M.A., A.I.C.
Glyn Rees Davies, B.Sc., Ph.D.
Harry George Ernest Davis, M.A.
Alec Edward Gawler, B.A.
Frederick George Germuth, B.Sc.
Arthur Kenneth Goard, M.A., Ph.D.
Charles Rodolphe Hall.
Moinuddin Syed Kazi, M.Sc.
Harry Fletcher Lewis, M.S., Ph.D.
John Lockhart McKee, M.Sc.
Frederick John Manning, B.Sc.
Joseph Marshall, D.Sc., F.I.C.
John Bramwell Miles, B.Sc., Ph.D.
Thomas Harold Prater, M.I.Gas.E., A.M.I.Chem.E.
Alfred Henry Marmaduke Purse, M.B.E.
Stanley Walter Read, B.Sc., A.R.C.S.
Joseph Rosin, B.S.Ch., M.Ph.
Katherine Isobel Ross, B.A., B.Sc.
Hilmi Isaac Said, B.Sc.
Fidel-Enrique Raurich Sas, Dr.Pharm.
John Walter Seekings.
Marcel Sommelet, D.-ès-Sc.
Joseph Beswick Stocks.
Leslie Ernest Sutton, B.A.
Robert Hugh Wilson, B.A.
Frank Wormwell, M.Sc.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Tinkari Basu, B.Sc., 28, Shampukur Street, Calcutta, India.
Edward Alexander Robert Bousfield, B.Sc., A.I.C., 131, Bedford Hill, S.W. 12.
Suresh Chandra Das Gupta, B.Sc., 32, Sukea Street, Calcutta, India.
Rowland Nicholas Johnson, M.Sc., 9, Lansdowne Road, Croydon.
Sakujiro Kimura, 41, Nozato Shimokatsura, Katzura Mura, near Kyoto, Japan.
Sir David Milne-Watson, M.A., LL.D., D.L., 73, Eccleston Square, S.W. 1.
John Stanley White, M.R.C.S., L.R.C.P., 50, Beak Street, Regent Street, W. 1.

The following papers were read :

" Orientation effects in the diphenyl series. Part IX. The nitration of 4-chloro-4′-fluoro- and 4-bromo-4′-fluorodiphenyl." By (Miss) E. E. J. Marler and E. E. Turner.

" Influence of poles and polar linkings on tautomerism in the simple three-carbon system. Part II. Prototropy in bis-quaternary

αγ-propenylene-diammonium salts." By C. K. INGOLD and E. ROTHSTEIN.

"The photodecomposition of ozone in presence of chlorine." By A. J. ALLMAND and J. W. T. SPINKS.

"The effect of intensive drying on the rate of distillation and on the vapour pressure of ethyl bromide." By J. W. SMITH.

Ordinary Scientific Meeting, Thursday, May 21st, 1931, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	Died.
Charles Alfred Allgood	June 20th, 1929.	May 4th.
John Cavendish Molson	Feb. 16th, 1899.	May 15th.

It was announced that :

1. The following Committees for 1930–1931 had been appointed by the Council :

Finance Committee : E. S. Mond, G. T. Moody, J. C. Philip, R. H. Pickard, F. L. Pyman, W. Rintoul, J. F. Thorpe, and the Officers (Treasurer as Chairman), with the Assistant Secretary as Secretary.

House Committee : A. J. Allmand, H. McCombie, Sir William J. Pope, Sir Robert Robertson, R. Robinson, J. F. Thorpe, and the Officers, with the Assistant Secretary as Secretary.

Library Committee : T. A. Henry (Chairman), J. J. Fox, C. K. Ingold, S. W. Smith, J. F. Spencer, H. Terrey, and the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

Publication Committee : J. C. Philip (Chairman), G. M. Bennett, H. V. A. Briscoe, H. M. Dawson, H. W. Dudley, A. C. G. Egerton, A. J. Greenaway, W. E. Garner, W. N. Haworth, I. M. Heilbron, J. T. Hewitt, C. N. Hinshelwood, C. K. Ingold, J. Kenyon, H. King, W. H. Mills, J. R. Partington, E. K. Rideal, R. Robinson, F. M. Rowe, J. L. Simonsen, S. Smiles, S. Sugden, and the Officers, with the Editor as Secretary.

Research Fund Committee : A. J. Allmand, J. E. Coates, W. N. Haworth, I. M. Heilbron, C. K. Ingold, A. Lapworth, T. M. Lowry, Sir Robert Robertson, R. Robinson, and the Officers, with the Assistant Secretary as Secretary.

2. The Council of the Institute of Fuel will hold on Wednesday, October 7th, 1931, at 7 p.m., a joint meeting of all those Technical Societies to which the subject of low-temperature carbonisation and hydrogenation of coal is of interest.

The meeting will be held in the Lecture Theatre of the Institution of Electrical Engineers (Savoy Place, Victoria Embankment, W.C. 2), Sir David Milne-Watson, LL.D., D.L. (President), being in the Chair. A paper dealing with the present position and future prospects of the conversion of coal into oil and smokeless fuel will be presented by Dr. W. R. Ormandy and opened for discussion.

Advance copies of papers to be read will probably be available 14 days before the meeting, and those Fellows desiring to attend the meeting and to receive advance copies of papers are requested to notify the Assistant Secretary, the Chemical Society, Burlington House, Piccadilly, W. 1, on or before Monday, September 14th.

Forms of recommendation for Fellowship were read for the first time in favour of :

Jack Pollard, 1, Brunel Street, Burnley, Lancs.
Harold Wheeler, 31, Burghley Road, Hornsey, N. 8.

The following forms of recommendation have been authorised by the Council for presentation to Ballot under Bye-Law I (2) :

Oliver Kamm, M.S., Ph.D., 571, Washington Road, Grasse Pointe, Mich., U.S.A.
Bijan Kumar Sen, M.Sc., 61, Lyons Range, Calcutta.
Maurice Craig Taylor, B.S., c/o The Mathieson Alkali Works, Inc., Niagara Falls, N.Y., U.S.A.

The following papers were read :

" Stereoisomerism of disulphoxides and related substances. Part VII. Some further pairs of isomeric dioxides." By G. M. Bennett and F. S. Statham.

" Stereoisomerism of disulphoxides and related substances. Part VIII. Isomeric tetrabromides of a disulphide." By G. M. Bennett and F. S. Statham.

" Studies in the penthian series. Part IV. The four stereoisomeric oxides of benzoylaminobenzpenthiene." By G. M. Bennett and W. B. Waddington.

" Derivatives of the aliphatic glycols. Part III. Chlorohydrins of some higher glycols." By G. M. Bennett and A. N. Mosses.

" The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part V. Comparative reactivities of nine

homologous phenyl ω-hydroxyalkyl sulphides with hydrobromic acid." By G. M. BENNETT and A. N. MOSSES.

"Studies in complex salts. Part IV. The effect of alkyl substitution on the tendency of the aminoacetate ion to co-ordinate with copper." By H. L. RILEY and V. GALLAFENT.

"The electrolytic dissociation of transitional metal salts. Part I. Copper, zinc, and nickel malonates." By D. J. G. IVES and H. L. RILEY.

List of Papers, or Abstracts thereof, received between March 19th and May 21st, 1931. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"An approximate determination of the molecular depression of the freezing point for bromyl chloride; a note on the recorded values of the same constant for camphor." By R. J. W. LE FÈVRE and W. H. A. WEBB.

"Metallic hydroxy-acid complexes. Part VI. Complexes of tartaric acid with trivalent metals." By E. E. WARK and I. W. WARK.

"The preparation and some properties of nickelous oxide." By M. PRASAD and M. G. TENDULKAR.

"The action of sulphuric acid on nickel–copper matte." By M. PRASAD and M. G. TENDULKAR.

"The rearrangement of the alkylanilines. Part IV. The formation of olefins from the alkylaniline hydrobromides." By W. J. HICKINBOTTOM and S. E. A. RYDER.

"Nitrous acid as a nitrating agent. Part III. The so-called β-3 : 4-dinitrodimethylaniline." By H. H. HODGSON and E. W. SMITH.

"The nuclear alkylation of aromatic bases. Part I. The action of methyl alcohol on the hydrochlorides of *ortho*- and *para*-toluidine, mesidine, and dimethyl-mesidine." By D. H. HEY.

"Styrylpyrylium salts. Part XIII. The reactivity of methyl β-phenylethyl and methyl γ-phenylpropyl ketones." By I. M. HEILBRON, R. N. HESLOP, F. IRVING, and J. S. WILSON.

"Synthesis of alkyl naphthalenes. Part III. 1 : 6 : 7-Trimethylnaphthalene." By D. G. WILKINSON.

"The structure of carbohydrates and their optical rotatory power. Part VI. 4-Glucosido-mannose and its methylated derivatives." By W. N. HAWORTH, E. L. HIRST, and H. R. L. STREIGHT.

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FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 4th, 1931.

BASU, TINKARI, 28, Shampukur Street, Calcutta, India. Hindu. Assistant Chemist, Industrial Research Laboratory Department of Industries, Bengal. B.Sc., University of Calcutta, 1917. Carried out and published in collaboration with Dr. R. L. Datta, D.Sc., F.R.S.E. researches in Applied Chemistry, viz. on the bleaching of the splints of *Excœcaria Agallocha*, the preparation of a solution containing phosphoric acid directly from bone ash for impregnation of match splints, and on the oils of *Calophyllum Inophyllum*, *Amoora Rohituka*, *Melia Azadirachta*, and *Pongamia Glabra* as raw materials for soap manufacture. All the researches have been printed by the Government of Bengal as Bulletins of the Department of Industries. [*Bulletins* Nos. 18, 27, 43, 46–48]. Also joint author with Dr. Datta of a Monograph on Shellac Manufacture. [*Vide* Imperial Institute *Bulletin* (No. 1 of 1929), Vol. XXVII, Abstract, pp. 112–14.] (*Signed by*) J. N. Mukherjee, P. C. Ray, J. C. Bardhan.

BOUSFIELD, EDWARD ALEXANDER ROBERT, 131, Bedford Hill, S.W. 12. British. Consulting Analytical and Research Chemist. B.Sc. London (Birkbeck College). Associate of Institute of Chemistry. Works Chemist to Milton Proprietary, Ltd., since August 1919, to present day, and practising

privately as Consultant Chemist at above address. (*Signed by*) W. R. Bousfield, Arthur S. Carlos, S. Sugden.

CLAYTON, GEORGE CHRISTOPHER, Crabwall Hall, Chester. British. Ph.D., Heidelberg; F.I.C. Director, Imperial Chemical Industries. President, Institute of Chemistry. (*Signed by*) Jocelyn Thorpe, C. S. Gibson, T. Slater Price.

DAS GUPTA, SURESH CHAUDRA, 32, Sukea Street, Calcutta, India. Bengali, Indian. Chief Chemist East India Manganese Co., Ltd. B.Sc. (Hons.), Calcutta University. (1) Asst. under Prof. Haralal Das Gupta, M.A., F.C.S.; (2) Holder of Government stipendiary scholarship for 2 years as student; (3) Chemist Indian Manganese Co., Nagpur (India); (4) Chief Chemist East India Manganese Co., Ltd., Ghatsila (India). (*Signed by*) P. B. Ganguly, H. L. Das Gupta, R. C. Ray, C. B. Roy.

JOHNSON, ROWLAND NICHOLAS, 9, Lansdowne Road, Croydon. British. Research Chemist. M.Sc. (London). Scientific Investigator, Dental Investigation Committee of Department of Scientific & Industrial Research. "Chlorosulphonyl Derivatives of Aromatic Amines," with Samuel Smiles, *J.C.S.*, 1923, 2384. (*Signed by*) C. S. Gibson, J. D. Johnson, L. A. Elson, B. Levin.

KIMURA, SAKUJIRO, 41, Nozato Shimokatsura, Katsura Mura, near Kyoto, Japan. Japanese. Dr. of Science obtained at Kyoto Imperial University. "Studies on Catalytic Action. XVIII. Catalytic Reduction of Naphthol" The Sexagint Dedicated to Prof. Y. Osaka, 217 (1927), *British Chemical Abst.*, 1928, 285; "Stereochemical Studies on Hydronaphthalenes. I. Catalytic Reduction of β-Naphthol at High Temperature and Pressure," *J.C.S. Japan*, 1930, 51, 208; "Studies on Sesquiterpenes. II. Sesquiterpene and Sesquiterpene Alcohol from Japanese Cedar-oil," *J.C.S. Japan*, 1930, 51, 518; "Stereochemical Studies on Hydronaphthalenes. II. Catalytic Oxidation and Reduction of Hydronaphthalenes and Sesquiterpenes," *J.C.S. Japan*, 1930, 51, 527. (*Signed by*) R. Nodzu, S. Araki, Robert Robinson.

MCLENNAN, KENNETH JOHN CABLE, 16, Ashburnham Gardens, Upminster. British. Director Messrs. Burgoyne Burbidges, Ltd., Manufacturing Chemists, East Ham, E. Member of the Pharmaceutical Society of Great Britain. (*Signed by*) E. D. Griffiths, W. T. Clough, L. J. Couzens.

MAYNE, JOHN EDWIN OAKLEY, 21, Lansdowne Road, Luton, Beds. British. Research Chemist. A.R.C.S., B.Sc. (2nd Honours), Imperial College, South Kensington. Junior Assistant Safety in Mines Research Board. Wire Rope Section, City & Guilds Eng. College, S.W. 7. (*Signed by*) H. B. Baker, M. A. Whiteley, James C. Philip.

MILNE-WATSON, (SIR) DAVID MILNE, Kt., D.L., 73, Eccleston Square, S.W. 1. British. Governor The Gas Light & Coke Company. M.A., LL.B. (Edinburgh), LL.D. (Leeds). (*Signed by*) Jocelyn Thorpe, C. S. Gibson, Francis H. Carr, H. Hollings, J. G. Clark, Walter A. Voss.

MITRA, DURGA DAS, 77A, Pataldanga Street, Calcutta, India. Bengalee. Medical Practitioner. B.Sc. (Calcutta University), M.B. (Cal.). Seven years' theoretical and practical past experience as a student in the Medical and other Colleges in Inorganic, Organic, Physical and Physiological Chemistry. (*Signed by*) J. P. Bose, Sudhamoy Ghosh, P. Neogi.

TAYLOR, ADAM, 16, Woodcraft Avenue, Broomhill, Glasgow, W. 1. British. Chief Pharmacist, Western Infirmary, Glasgow. I am anxious to join the Chemical Society in order to have access to the library, to have the use of the Journals, and to attend at lectures while in London. (*Signed by*) G. F. Merson, Archibald Macpherson, G. Baty Scott, W. D. Wallace.

WHITE, JOHN STANLEY, 50, Beak Street, Regent Street, W. 1. British.

Medical Expert to Messrs. Parke, Davis & Co., London. M.R.C.S. (Eng.), L.R.C.P. (Lond.). Pharmaceutical Chemist. Publications, Meetings, Library. (*Signed by*) Rupert Woolby Brooke, T. W. Jones, H. Lucas.

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KAMM, OLIVER, 571, Washington Road, Grosse Pointe, Michigan, U.S.A. French-Swiss. Chemist. Scientific Director, Parke, Davis & Co., Detroit. B.S., M.S., and Ph.D., University of Illinois. Recent publications: "The Dialysis of Pituitary Extracts," *Science*, 1928, **67**, 199; "The Active Principles of Posterior Lobe of the Pituitary Gland," *J. Amer. Chem. Soc.*, 1928, **50**, 573, with T. B. Aldrich, I. W. Grote, E. P. Bugbee, and L. W. Rowe; "Recent Progress in the Investigation of the Posterior Lobe of the Pituitary Gland," *Endocrinology*, 1928, **12**, 671, with E. P. Bugbee. Book: "Qualitative Organic Analysis," Spanish Edition, 1930. "The Possibility of Interconversion of the Pituitary Hormones and the Formation of 'Derived Hormones' from the Beta Hormone of the Posterior Lobe," article being presented at the April 1931 (Montreal) meeting of Amer. Soc. Biol. Chem. (*Signed by*) James Kendall.

SEN, BIJAN KUMAR, c/o Shalimar Paint, Colour & Varnish Co., Ltd., 61, Lyon's Range, Calcutta. Indian. Assistant in the Paint Works. M.Sc. in Chemistry, 1st Class (Calcutta University). Formerly Professor of Chemistry, St. James' College, Calcutta. Experience in the manufacture and production of paint, etc. Joint author of a paper entitled "Benzidine Rearrangement in Heterocyclic Series" (*J.I.C.S.*, Vol. V, issue 5 of 1928). (*Signed by*) Nani Gopal Chakravarti, J. C. Bardhan.

TAYLOR, MAURICE CRAIG, c/o The Mathieson Alkali Works, Inc., Niagara Falls, N.Y., U.S.A. American. Chemist. B.S., Purdue University, Lafayette, Ind. Present position, Chief Research Chemist with the Mathieson Alkali Works. Published work on hypochlorites: *J. Amer. Chem. Soc.*, **47**, 395–403; *J. Ind. Eng. Chem.*, **14**, 632–635 (U.S. patents: 1,481,040, 1,781,039, 1,609,328, 1,650,054, 1,716,014, 1,718,284). Other published work: "Chromous Chloride," *J. Amer. Chem. Soc.*, **44**, 612–614; "Peroxidase," *J. Dairy Science*, **7**, 234–244. (*Signed by*) L. F. Goodwin.

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III. *Pamphlets presented by Dr. R. E. W. Maddison.*

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MINISTRY OF TRANSPORT and MINISTRY OF AGRICULTURE AND FISHERIES. *Joint Committee on Damage to Fisheries.* Detailed biological and chemical reports on tars used for road-surfacing. London 1930. pp. 171. ill.

MIYAGAWA, ICHIRO. Pyritic oxidation in relation to spontaneous combustion of coal. (From the *Mem. Coll. Eng. Kyushu Imp. Univ.*, 1930, **5**.)

MIYAGAWA, ICHIRO, YAMADA, M., and INABA, J. The spontaneous combustion of coal. (From the *J. Fuel Soc. Japan*, 1929, **8**.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 4th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	Died.
Horace Woodward Crowther	Dec. 1st, 1887.	March 20th.
Charles Thomas Heycock	June 21st 1883.	June 3rd.

Professor Thorpe stated that Mr. Heycock had been Goldsmith Reader in Metallurgy at the University of Cambridge; he had been associated with Mr. F. H. Neville in research on the lowering of the freezing point of metals by the addition of other metals which ultimately led to an extension of the phase-rule investigation into the non-ferrous alloys, especially those of gold, and had contributed many papers to the Transactions. Mr. Heycock had served on the Council as a Vice-President and as an Ordinary Member, and his death will be deplored as a loss not only to this Society, but to Chemistry generally.

The CHAIRMAN announced that a communication had been received from the Committee of the Van't Hoff Fund for the endowment of research in pure and applied chemistry. The amount from this fund available for distribution during 1932 is about 1200 Dutch guilders.

A Committee consisting of Professor A. F. Holleman (President), Professor F. M. Jaeger, Professor A. Smits, and Professor J. P. Wibaut (Secretary) has been appointed to award grants. Applications should be sent before November 1st, 1931, by registered post to: "Het Bestuur der Koninklijke Akademie van Wetenschappen, bestemd voor de Commissie van het van 't Hoff-funds, Trippenhuis, Klovenierburgwal, Amsterdam. Every applicant is requested to submit a detailed account of the manner in which he

proposes to expend the grant and to state the reasons for which he makes his application. Papers embodying the results of the research may be published in any journal, but acknowledgment must be made of the source of the grant. Copies of papers containing the results of the research must be forwarded to the Committee.

Forms of Recommendation for Fellowship were read for the first time in favour of

Brinley Griffith, B.Sc., "Gwynfa," Edward Close, Brentwood Road, Romford.
Frank Eric Lavalette, M.Sc., c/o St. James College, 165, Lower Circular Road, Calcutta.
Parameswar Velayudhan Nair, B.A., M.Sc., Dyson Perrins Laboratory, Oxford.
Gertrude Margaret Clare Watkins, B.Sc., 39, Upland Road, Sutton, Surrey.

Dr. R. K. Callow and Dr. A. I. Vogel were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :—

Tinkari Basu, B.Sc.
Edward Alexander Robert Bousfield, B.Sc., A.I.C.
George Christopher Clayton, C.B.E., Ph.D., F.I.C.
Suresh Chandra Das Gupta, B.Sc.
Rowland Nicholas Johnson, M.Sc.
Oliver Kamm, M.S., Ph.D.
Sakujiro Kimura.
Kenneth John Cable McLennan.
John Edwin Oakley Mayne, B.Sc., A.R.C.S.
Sir David Milne Milne-Watson, Kt., M.A., LL.D., D.L.
Durga Das Mitra, B.Sc., M.B.
Bijan Kumar Sen, M.Sc.
Adam Taylor.
Maurice Craig Taylor, B.S.
John Stanley White, M.R.C.S., L.R.C.P.

The following papers were read :—

"Synthesis of substances analogous to bile acid degradation products. Part I. Preliminary investigation of methods of attachment of carboxylated side chains to the *cyclo*pentane nucleus." By J. W. Baker.

"Reactions of ω-substituted acetophenone derivatives. Part I. The action of acetyl nitrate on ω-halogeno-*m*-nitroacetophenones." By J. W. Baker.

"The constitution and synthesis of embelic acid (embelin), the active principle of *Embelia Ribes*." By K. H. Hasan and E. Stedman.

"Adsorption of nitrogen by condensed atomic platinum." By S. H. Bastow.

"The direct formation of quinones from 2 : 6-disubstituted derivatives of 4-nitrophenol." By E. C. S. Jones and J. Kenner.

The Council have made the following Grants from the Research Fund :—

	£	s.	d.
The contact and function of solid surfaces. F. P. Bowden. (Cambridge Univ.)	10	0	0
Behaviour of boron in union with organic radicals (*cont'd.*). F. Challenger. (Leeds Univ.)...	7	10	0
New types of organo-metallic compounds. F. Challenger. (Leeds Univ.)	7	10	0
Chemistry of santonin and related problems. G. R. Clemo. (Armstrong Coll.)	7	10	0
Conductivity of sparingly soluble electrolytes. C. W. Davies. (Battersea Polytechnic.)	6	0	0
Influence of configurational and cyclising factors on the additive mode of butadienoid compounds. M. H. Desai. (Imperial Coll.)	7	10	0
Effect of the methyl*cyclo*hexane ring on the carbon tetrahedral angle. R. D. Desai. (Imperial Coll.)	8	0	0
Synthetical studies in Jaborandi alkaloids. A. N. Dey. (Imperial Coll.)	8	0	0
Nature of the active form of hydrogen produced in ozoniser discharges. G. A. Elliott. (Perth Univ.)	25	0	0
Electro-endosmosis. F. Fairbrother. (Manchester Univ.) ...	12	0	0
Three-carbon tautomerism. H. B. Fraser. (Imperial Coll.) ...	7	10	0
Investigation of cinchonoid substances (*cont'd.*). (Miss) R. V. Henley. (Bedford Coll.)	10	0	0
Hydrogenation of butadiene systems. C. G. B. Hose. (Imperial Coll.)	7	10	0
Stereochemistry of diphenyl compounds. (Miss) M. S. Lesslie. (Bedford Coll.)	6	0	0
Diphenyl compounds (*cont'd.*). (Miss) E. E. J. Marler. (Bedford Coll.)	6	0	0
Properties of conjugated compounds. F. C. B. Marshall. (Imperial Coll.)	5	0	0
The glutaconic problem. H. R. Nanji. (Imperial Coll.) ...	7	10	0
Investigation of substitution in the diphenyl series. (Miss) F. R. Shaw. (Bedford Coll.)	5	0	0
Physico-chemical properties of mixtures. (Miss) V. C. G. Trew. (Bedford Coll.)	7	10	0
Synthesis of cyclic compounds (*cont'd.*). A. I. Vogel. (Univ. Coll., Southampton)	10	0	0
Physical properties of organic mixtures. (Miss) G. M. C. Watkins. (Bedford Coll.)	7	10	0
Kinetics of chlorination of anilides and benzamides. G. Williams. (Deeside Central School, Shotton)	5	0	0
(*a*) The tautomeric changes of geometrical isomerides. (*b*) The lactonisation of substituted unsaturated acids. J. M. Wright. (Imperial Coll.)	7	10	0
	£191	0	0

THE LIBRARY.

The Library will be closed for stocktaking from Monday, August 3rd, until Saturday, August 15th (inclusive). During the following four weeks (August 17th to September 12th) the Library will close daily at 5 p.m.

THE INSTITUTE OF FUEL.

The Council of the Institute of Fuel will hold on Wednesday, October 7th, 1931, at 7 p.m., a joint meeting of all those Technical Societies to which the subject of low-temperature carbonisation and hydrogenation of coal is of interest.

The meeting will be held in the Lecture Theatre of the Institution of Electrical Engineers (Savoy Place, Victoria Embankment, W.C. 2), Sir David Milne-Watson, LL.D., D.L. (President), being in the Chair. A paper dealing with the present position and future prospects of the conversion of coal into oil and smokeless fuel will be presented by Dr. W. R. Ormandy, and opened for discussion.

Advance copies of papers to be read will probably be available 14 days before the meeting, and those Fellows desiring to attend the meeting are requested to notify the Assistant Secretary, the Chemical Society, Burlington House, Piccadilly, W. 1, on or before Monday, September 14th.

List of Papers, or Abstracts thereof, received between May 21st and June 4th, 1931. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"A note on the calculation of the true adsorption." By K. S. G. Doss.

"2-(2-Aminobenzyl)pyridine." By R. H. Wilson.

"The configurations of the α-oximino-ketones." By T. W. J. Taylor.

"The labile nature of the halogen atom in organic compounds. Part XIV. The reactivity of halogen derivatives of 5-alkyl-barbituric acids." By A. B. Cox, A. K. Macbeth, and S. W. Pennycuick.

"The dissociation constants of organic acids. Part IV. The mobilities of the sodium, potassium, and hydrogen ions at 25°, and the determination of cell constants at 25°." By G. H. Jeffery and A. I. Vogel.

"The vapour pressure of hydrogen selenide and hydrogen telluride." By N. O. Stein.

"Quinoline compounds containing arsenic. Part III. Synthesis of *o*-5′-nitro-8′-quinolylaminophenylarsonic acid, 12-chloro-10-nitro-5 : 12-dihydroquinbenzarsazine and 10-nitroquinbenzarsazonic acid." By R. H. SLATER.

"The condensation of aromatic aldehydes with malonanilic acid and its derivatives." By G. S. AHLUWALIA, M. A. HAQ, and J. N. RÂY.

"Thermal chlorination reactions in the gaseous phase, with short heating periods." By J. MASON and T. S. WHEELER.

"The reactions of divinyl sulphide, sulphoxide, and sulphur." By J. R. ALEXANDER and H. MCCOMBIE.

"The selenates of neodymium and their solubilities in water and acid solutions." By J. A. N. FRIEND.

"The molecular lowering of freezing point for camphor." By R. J. W. LE FÈVRE and (Miss) C. G. TIDMAN.

"The dimorphism of certain higher aliphatic compounds." By J. W. C. PHILLIPS and S. A. MUMFORD.

"Influence of directing groups on nuclear reactivity in oriented aromatic substitutions. Part II. Nitration of toluene." By C. K. INGOLD, A. LAPWORTH, E. ROTHSTEIN, and D. WARD.

"The action of chlorine upon chloro-substituted hydrazones." By F. D. CHATTAWAY, T. DEIGHTON, and A. ADAIR.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part VII. The 3′-nitro- and 3′-amino-derivatives of 3-phenyl-4-methylphthalaz-1-one, and the nitro-3-phenyl-1-methylphthalaz-4-ones." By F. M. ROWE and A. T. PETERS.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

(a) *Presented by Mr. William Macnab, C.B.E.*

CHALON, PAUL FRÉDÉRIC. Les explosifs modernes. 3rd edition. Paris 1911. pp. iv + 789. ill.

JAHRBUCH DER ELEKTROCHEMIE. Years II—VII. Halle a.S. 1896—1901. (*For circulation.*)

MÉMORIAL DES POUDRES ET SALPÊTRES. Vols. I—XVII. Paris 1882—1914.

VENNIN, L., and CHESNEAU, GABRIEL. Les poudres et explosifs et les mesures de sécurité dans les mines de houille. Paris 1914. pp. xx + 573. ill.

(b) *Miscellaneous Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 2, II

Hälfte, Heft 8. Berlin 1931. pp. 2971 to 3078. *M.* 5.50. (*Recd.* 18/5/31.) From the Publishers: Herren Urban & Schwarzenberg.

Briggs, Dennis Brook. Chemical change. London 1931. pp. viii + 166. ill. 5*s.* net. (*Recd.* 6/5/31.) From the Author.

Chamot, Émile Monnin, and Mason, Clyde Walter. Handbook of chemical microscopy. Vol. II. Chemical methods and inorganic qualitative analysis. New York 1931. pp. x + 411. ill. 22*s.* 6*d.* net. (*Recd.* 7/5/31.)

From the London Publishers: Messrs. Chapman & Hall.

Chartrou, Jean J. Pétroles naturel et artificiels. Paris 1931. pp. iv + 206. ill. 10 *fr.* 50. (*Recd.* 30/5/31.)

From the Publisher: M. Armand Colin.

Chikashige, Masumi. Anniversary volume . . . by his pupils in celebration of his sixtieth birthday. Kyoto 1930. pp. x + 348. ill. (*Recd.* 30/5/31.) From the Editor.

Cochrane, J. A. Lavoisier. pp. xiv + 264. ill. 7*s.* 6*d.* net. (*Recd.* 20/5/31.) From the Publishers: Messrs. Constable & Co.

Corbière, Jacques. Sur la fixation des matières grasses émulsionnées par les fibres textiles. Lyon 1931. pp. x + 125. ill. (Two copies.) (*Recd.* 2/5/31.)

From the Publishers: Imprimerie A. Rey.

Farbe und Lack. Centralblatt der deutschen Farben- und Lackindustrie. Anzeiger für die chemische Industrie. Hannover 1931 +. (*Reference.*)

Farben-Chemiker, Der. Zeitschrift über Herstellung und Gewinnung von Farblacken, Lackfarben, Erdfarben, Spezialfarben und Lacken usw. Year II, etc. Berlin 1931 +. (*Reference.*)

From the Bureau of Chemical Abstracts.

Gabillion, Robert. Soies artificielles et matières plastiques. Paris 1931. pp. iv + 204. ill. 10 *fr.* 50. (*Recd.* 30/5/31.)

From the Publisher: M. Armand Colin.

Gray, James. A text-book of experimental cytology. Cambridge 1931. pp. x + 516. ill. 25*s.* net. (*Recd.* 28/5/31.)

From the Syndics of the Cambridge University Press.

Krczil, Franz. Untersuchung und Bewertung technischer Adsorptionsstoffe. Leipzig 1931. pp. x + 504. ill. *M.* 30. (*Recd.* 28/5/31.) From Professor F. M. Rowe.

Kühl, Hans. Cement chemistry in theory and practice. Translated by Joseph William Christelow. London [1931]. pp. vi + 64. ill. 7*s.* 6*d.* net. (*Recd.* 4/6/31.)

From the Publishers: Messrs. Concrete Publications.

Maerz, A., and Paul, M. Rea. A dictionary of color. New York 1930. pp. 207. ill. (*Reference.*) $12.

From Professor F. M. Rowe.

ORGANIC SYNTHESES. An annual publication of satisfactory methods for the preparation of organic chemicals. Vol. XI. New York 1931. pp. viii + 106. 8*s*. 6*d*. net. (*Recd*. 29/4/31.)
From the London Publishers: Messrs. Chapman & Hall.

SCHEELE, CARL WILHELM. Collected papers. Translated from the Swedish and German originals by LEONARD DOBBIN. London 1931. pp. xvi + 367. ill. 10*s*. net. (*Recd*. 4/6/31.)
From the Publishers: Messrs. G. Bell & Sons.

SEN, HEMENDRA KUMAR. High temperature flames and their thermodynamics. Calcutta 1931. pp. x + 135. ill. (*Recd*. 18/5/31.) From the Author.

THOMAS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part viii. Berlin 1931. pp. 1525 to 1702, 280, viii. ill. *M*. 20. (*Recd*. 19/5/31.)
From the Publishers: Herren Urban & Schwarzenberg.

TSCHITSCHIBABIN, ALEXEJ EUGUENIEVITSCH. Fundamental principles of organic chemistry. 3rd edition. Moscow 1931. pp. xxiv + 727. ill. [In Russian.] (*Recd*. 22/5/31.) From the Author.

UNION INTERNATIONALE DE CHIMIE. Dixième conférence, Liége 1930. Rapports sur les hydrates de carbone (glucides). Paris [1931.] pp. 287. ill. (*Reference*.) 50 *fr*. From the Union Internationale.

WELDON, WALTER. On the ratios one to another of the atomic weights of the elements. Chapter I.—The glucinum family. London 1885. pp. 37. (*Reference*.) From Dr. O. Rosenheim, F.R.S.

II. *By Purchase*.

BASSETT, HENRY NORMAN. The chemical technology of steam-raising plant. London 1931. pp. viii + 240. ill. 12*s*. 6*d*. net. (*Recd*. 23/5/31.)

BEYTHIEN, ADOLF. Laboratoriumsbuch für den Nahrungsmittelchemiker. Dresden 1931. pp. xxiv + 589. ill. *M*. 40. (*Recd*. 12/6/31.)

BRIEGLEB, G., and WOLF, K. L. Lichtzerstreuung, Kerreffekt und Molekülstruktur. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XXI.) Berlin 1931.

FLURY, FERDINAND, and ZERNIK, FRANZ. Schädliche Gase, Dämpfe, Nebel, Rauch- und Staubarten. Berlin 1931. pp. xii + 637. ill. *M*. 69. (*Recd*. 12/6/31.)

GREGORY, JOSHUA CRAVEN. A short history of atomism from Democritus to Bohr. London 1931. pp. viii + 258. 10*s*. 6*d*. net. (*Recd*. 22/5/31.)

HOUSE, A. G. Bacteriological control of milk: a practical guide for media preparation and milk testing. Reading 1931. pp. xii + 59. ill. 3*s*. 6*d*. net. (*Recd*. 27/5/31.)

JORDAN, EDWIN OAKES. Food poisoning and food-borne infection. 2nd edition. Chicago 1931. pp. xii + 286. ill. 11*s*. 6*d*. net. (*Recd*. 23/5/31.)

KOWALKE, O. L., HOUGEN, O. A., and WATSON, H. M. Transfer coefficients of ammonia in absorption towers. (*Bull. Univ. Wisconsin Eng. Exper. Stat*., Ser. No. 68.) Madison 1915. pp. 86. ill. 3*s*. net. (*Recd*. 24/4/31.)

LIPPMANN, EDMUND OSKAR VON. Entstehung und Ausbreitung der Alchemie. Mit einem Anhange: zur älteren Geschichte der Metalle. 2 vols. Berlin 1919–31. pp. xvi + 742, viii + 258. *M*. 25, *M*. 26.60. (*Recd*. 12/6/31.)

MUNCH, JAMES, C. Bioassays: a handbook of quantitative pharmacology. London 1931. pp. x + 958. ill. 45*s*. net. (*Recd*. 21/5/31.)

PRESCOTT, SAMUEL CATE, and WINSLOW, CHARLES-EDWARD A. Elements of water bacteriology with special reference to sanitary water analysis. 5th edition. New York 1931. pp. x + 219.

RIJN, JACOBUS JOSEPH LOUIS VAN. Die Glykoside. Chemische Monographie der Pflanzenglykoside. 2nd edition. By HUGO DIETERLE. Berlin 1931. pp. viii + 620. *M*. 48. (*Recd*. 21/5/31.)

SCHÖNFELD, H. Neuere Verfahren zur Raffination von Oelen und Fetten. Berlin 1931. pp. 110. ill. *M*. 12. (*Recd*. 4/6/31.)

STARK, JOHANNES. Fortschritte und Probleme der Atomforschung. Leipzig 1931. pp. viii + 112. ill. *M*. 4.80. (*Recd*. 4/6/31.)

TROTMAN, SAMUEL RUSSELL, and TROTMAN, EDWARD RUSSELL. Artificial silks. London 1931. pp. x + 274. ill. 18*s*. net. (*Recd*. 21/5/31.)

UNITED STATES. *Department of Commerce*. Bureau of Mines. Bulletin 327. Potash bibliography to 1928 (annotated). By J. F. T. BERLINER. Washington 1930. pp. ii + 578. (*Reference*.) 5*s*. net.

—— —— National Bureau of Standards. Miscellaneous Publication No. 110. Standards and specifications for non-metallic minerals and their products. Prepared by JOHN Q. CANNON, Jr. Washington 1930. pp. x + 680. ill. (*Reference*.) 15*s*. net.

WARREN, H. Electrical insulating materials. London 1931. pp. 516. ill. 42*s*. net. (*Recd*. 21/5/31.)

WINKLER, LUDWIG WILHELM. Ausgewählte Untersuchungsverfahren für das chemische Laboratorium. (Die Chemische Analyse, Vol. XXIX.) Stuttgart 1931. pp. xviii + 155. ill. (*Reference*.)

III. *Pamphlets*.

AIYAR, G. K. [and others]. Notes on the Burmese species of plants yielding chaulmugra oil. (*Burma Forest Bulletin*, No. 21.) Rangoon 1930. pp. iv + 22. ill.

ASSOCIATION OF BRITISH CHEMICAL MANUFACTURERS. An index to Acts of Parliament and Statutory Rules and Orders affecting the chemical industry. London 1931. pp. 24.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 18. The influence of frequency of cutting on the productivity, botanical and chemical composition, and the nutritive value of " natural " pastures in Southern Australia. By J. GRIFFITHS DAVIS and ARTHUR HENRI SIM. Melbourne 1931. pp. 28. ill.

GENERAL MEDICAL COUNCIL. *Pharmacopœia Commission.* Reports of sub-committees. 1. Pharmacy. 2. Pharmaceutical chemistry. 3. Cod-liver oil colour test. London 1930–31. pp. 35, 90, 5.

HUNTER, ROBERT FERGUS. Some applications of the electronic theory of valency. Aligarh 1931. pp. 62.

—— Some philosophical aspects of the phenomenon of tautomerism. Aligarh 1931. pp. 18.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 68. A routine test of the inflammability of mine dusts. London 1931. pp. 9. ill.

NASH, ALFRED WILLIAM. The work of the physicist and chemist in the petroleum industry. (From the *School Sci. Rev.*, 1931.)

PARLIAMENTARY REPORTS. *Departmental Committee on the Poisons and Pharmacy Acts.* Report. London 1930. pp. 59.

PROBEY, T. F., and MCCOY, G. W. Relation between trypanocidal and spirocheticidal activities of neoarsphenamine. (From the *U.S. Public Health Reports*, 1930, **45**.)

SAGER, GEORGE F. Investigation of the thermal conductivity of the system copper–nickel. (*Rensselaer Poly. Inst. Bull., Eng. Sci. Ser.* No. 27.) 1930. pp. 48. ill.

SAYERS, R. R., and DAVENPORT, SARA J. Review of carbon monoxide poisoning. (*U.S. Public Health Bull.* No. 195.) Washington 1930. pp. ii + 97.

SCHNEIDEWIND, RICHARD. Commercial chromium plating. (*Univ. Michigan Eng. Research Circular*, No. 3.) Ann Arbor 1930. pp. 60. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of. *Building Research.* Bulletin No. 10. The prevention of pattern staining of plasters. By D. G. R. BONNELL and L. W. BURRIDGE. pp. iv + 8.

—— —— Bulletin No. 11. The effect of building materials on paint films. By HERBERT MERVYN LLEWELLYN. London 1931. pp. iv + 4.

—— *Food Investigation.* Special Report No. 40. The corrosion of

the tin-plate container by food products. By T. N. MORRIS and J. M. BRYAN. London 1931. pp. viii + 85. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of. *Fuel Research*. Technical Paper No. 30. The water gas process: a study of the carbon and thermal balances. By JAMES GRIEVE KING and B. H. WILLIAMS. London 1931. pp. vi + 31. ill.

SCOTLAND. *Department of Health*. Scottish Advisory Committee on Rivers Pollution Prevention. First report. Edinburgh 1931. pp. 58.

SMITH, MAURICE I. A quantitative colorimetric reaction for the ergot alkaloids and its application in the chemical standardization of ergot preparations. (From the *U.S. Public Health Reports*, 1930, **45**.)

SMITH, MAURICE I., ELVOVE, ELIAS, and FRAZIER, W. H. The pharmacological action of certain phenol esters with special reference to the etiology of so-called ginger paralysis. (From the *U.S. Public Health Reports*, 1930, **45**.)

SMITH, MAURICE I. [and others]. Pharmacological and chemical studies of the cause of so-called ginger paralysis. A preliminary report. (From the *U.S. Public Health Reports*, 1930, **45**.)

SOUTH AFRICA, UNION OF. *Department of Agriculture*. (Division of Chemistry Series, No. 113.) The sticky point water of soils. By BERNARD DE COLIGNY MARCHAND. (From the *S. African J. Sci.*, 1930, **27**.)

—— —— (Division of Chemistry Series, No. 114.) A note on the abnormalities in the composition of oranges. By P. R. V.D. R. COPEMAN. (From the *S. African J. Sci.* 1930, **27**.)

SOUTH METROPOLITAN GAS COMPANY. *Chemical Department*. An investigation into the nature and properties of coal tar. By EDWARD VICTOR EVANS and HERBERT PICKARD. [London] 1931. pp. 41. ill.

SPARN, ENRIQUE. Las asociaciones químicas con más de 500 socios. (From *Temas de Quimicas*, 1930, **3**.)

STREETER, H. W. Experimental studies of water purification. IV and V. (From the *U.S. Public Health Reports*, 1930, **45**.)

TAKAMIYA, ETSUO. On the chemical nature of vitamin D. (From the *J. Dept. Agric., Kyushu Imp. Univ.*, 1930, **3**.)

UNITED STATES. *Department of Agriculture*. Circular No. 129. Survey of the fertilizer industry. By P. E. HOWARD. Washington 1931. pp. 22.

—— —— Technical Bulletin No. 212. Mechanical analysis of finely divided phosphates. By LYLE T. ALEXANDER and K. D. JACOB. Washington 1930. pp. 24. ill.

UNITED STATES. *Department of Agriculture.* Technical Bulletin No. 214. The physical and chemical characteristics of certain American peat profiles. By IRVIN C. FEUSTEL and HORACE G. BYERS. Washington 1930. pp. 26. ill.

—— —— Technical Bulletin No. 228. Character of the colloidal materials in the profiles of certain major soil groups. By M. S. ANDERSON and HORACE G. BYERS. Washington 1931. pp. 24.

—— —— Technical Bulletin No. 229. Variations of the colloidal material extracted from the soils of the Miami, Chester, and Cecil series. By R. S. HOLMES and GLEN EDGINGTON. Washington 1930. pp. 23. ill.

—— —— Technical Bulletin No. 232. A laboratory study of the field percolation rates of soils. By C. S. SLATER and H. G. BYERS. Washington 1931. pp. 23. ill.

—— *Department of Commerce.* Bureau of Mines. Bulletin 279. Limits of inflammability of gases and vapors. By HUBERT FRANK COWARD and G. W. JONES. Revised edition. Washington 1931. pp. vi + 114. ill.

—— —— —— Bulletin 302. Fuel-efficiency tests on batch oil stills. By HENRY KREISINGER, W. R. ARGYLE, and W. E. RICE. Washington 1929. pp. vi + 94. ill.

—— —— —— Bulletin 308. Oxides in pig iron : their origin and action in the steel-making process. By C. H. HERTY, Jr., and J. M. GAINES, Jr. Washington 1929. pp. iv + 56. ill.

—— —— —— Bulletin 312. Bauxite : float-and-sink fractionations and flotation experiments. By B. W. GANDRUD and FRED D. DE VANEY. Washington 1929. pp. iv + 101. ill.

—— —— —— Bulletin 317. Rock-strata gases of the Cripple Creek district, Colo. and their effect on mining. By E. H. DENNY [and others]. Washington 1930. pp. iv + 66. ill.

—— —— —— Bulletin 321. Innovations in copper leaching employing ferric sulphate–sulphuric acid. By HARMON E. KEYES. Washington 1930. pp. iv + 67. ill.

—— —— —— Miners Circular 33. Advanced mine rescue training. Part I. Mine gases and methods for their detection. By J. J. FORBES and G. W. GROVE. Washington 1929. pp. 65. ill.

—— —— —— Technical Paper 453. Factors governing removal of soluble copper from leached ores. By JOHN D. SULLIVAN and ALVIN J. SWEET. Washington 1929. pp. 26. ill.

—— —— —— Technical Paper 464. Coal-dust explosibility factors indicated by experimental mine investigations 1911 to 1929. By GEORGE S. RICE and H. P. GREENWALD. Washington 1929. pp. 45. ill.

—— —— —— Technical Paper 466. Effect of manganese on

distribution of carbon in steel. By B. M. LARSEN. Washington 1929. pp. iv + 31. ill.

UNITED STATES. *Department of Commerce.* Bureau of Mines. Technical Paper 472. Acceleration of extraction of soluble copper from leached ores. By MORRIS GUGGENHEIM and JOHN D. SULLIVAN. Washington 1930. pp. 30. ill.

—— —— —— Technical Paper 473. Chemistry of leaching chalcocite. By JOHN D. SULLIVAN. Washington 1930. pp. 24. ill.

—— —— —— Technical Paper 476. Stock distribution and gas-solid contact in the blast furnace. By C. C. FURNAS and T. L. JOSEPH. Washington 1930. pp. iv + 73.

—— —— —— Technical Paper 477. A study of the lubrication fractions of Cabin Creek (W. Va.) petroleum. With chapters on the action of solvents on the heavy constituents of petroleum. By F. W. LANE [and others]. Washington 1930. pp. iv + 48. ill.

—— —— —— Technical Paper 479. A study of the production of activated carbon from various coals and other raw materials. By A. C. FIELDNER, R. E. HALL, and A. E. GALLOWAY. Washington 1930. pp. 30. ill.

—— —— —— Technical Paper 480. Intensities of odors and irritating effects of warning agents for inflammable and poisonous gases. By S. H. KATZ and E. J. TALBERT. Washington 1930. pp. 37. ill.

—— —— Bureau of Standards. Feldspar. Commercial Standard CS23–30. Washington 1930. pp. vi + 14.

—— —— —— Circular No. 389. The making of mirrors by the deposition of metal on glass. Washington 1931. pp. ii + 17. ill.

—— —— —— Miscellaneous Publication No. 112. Manufacture of insulating board from cornstalks. By O. R. SWEENEY and W. E. EMLEY. Washington 1930. pp. 27. ill.

—— —— —— Miscellaneous Publication No. 114. Filters for the reproduction of sunlight and daylight and the determination of color temperature. By RAYMOND DAVIS and K. S. GIBSON. Washington 1931. pp. 165. ill.

VLASSOPOULOS, VLASSIOS. Über die sterische Hinderung bei Reaktionen von Aminosäuren und Polypeptiden, zugleich ein Beitrag zum Wesen der sterischen Hinderung. Leipzig 1931. pp. 31.

ZIEREN, MAGDALENA. Bijdrage tot de kennis van de invloed van vergiften op de waterstofpotentiaal en de waterstofdiffusie. Purmerend 1929. pp. viii + 104. ill.

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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Extraordinary General Meeting, Thursday, October 15th, 1931, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The notice convening the meeting was read, announcing that the following alterations in the Bye-Laws had been proposed by the Council:

Bye-Law I.

(*a*) Page 4, line 22, insert after the words "to do so" the following words: "And provided further that the Council shall have power, without such confirmation, in the case of any person who has been a Fellow for not less than 40 years, wholly to remit or to reduce the annual subscriptions thereafter payable by him whenever it may consider it desirable to do so."

(*d*) Page 5, line 21, insert after the words "in arrear" the following words: "or shall not have been remitted or reduced under the provision hereinbefore contained."

Bye-Law IV.

(*c*) Page 7, line 12, insert after the words "his subscriptions" the following words: "or such portion thereof as the Council may determine."

Bye-Law VIII.

(*d*) Page 10, line 20, insert after the words "one year," the following words: "save and except that if there shall not be eligible for election six Vice-Presidents who have filled the office of President the Council shall have the power to nominate for re-election for the coming year one or more of the retiring Vice-Presidents who have filled such office."

The President stated that under Bye-Laws I and IV the Council sought discretionary power

(*a*) To remit the payment of the annual subscription in the case of a Fellow of not less than 40 years' standing, who is unable to continue to pay the annual subscription.

In such case the Fellow will not receive the publications of the Society.

(*b*) To reinstate a former Fellow without requiring payment of the arrears of annual subscriptions that were due at the time he or she ceased to be a Fellow of the Society.

and that the proposed alteration in Bye-Law VIII would enable the retiring Vice-Presidents (who have filled the office of President) to be immediately eligible for re-election, if, otherwise, the number of such Vice-Presidents would be less than six. Such re-election will be by ballot. Under the Bye-Law as at present constituted, it was not possible to elect more than five Vice-Presidents in this category at the Annual General Meeting in March 1931.

The motion that these alterations to the Bye-Laws be adopted was then proposed from the Chair and carried unanimously.

At the Ordinary Scientific Meeting which followed, the PRESIDENT referred to the loss sustained by the Society, through death, on May 23rd, 1931, of Professor Frank Wigglesworth Clarke, who was elected an Honorary Fellow on May 18th, 1904, and of the following Fellows :

	Elected.	*Died.*
Thomas H. Bailey	Feb. 8th, 1926.	April 13th, 1931.
Sir Hugh Bell, Bart.	Feb. 15th, 1917.	June 29th, 1931.
Ethelbert W. Blair	Feb. 19th, 1914.	April 23rd, 1931.
Edwin C. Conrad	April 4th, 1883.	May 8th, 1931.
William E. Downey	Feb. 18th, 1926.	Aug. 19th, 1931.
John W. Hinchley	Dec. 3rd, 1896.	Aug. 13th, 1931.
Harold Holcroft	June 1st, 1876.	July 13th, 1931.
Reginald Hopkinson	May 6th, 1909.	Dec. 8th, 1930.
Charles A. Keane	June 17th, 1886.	Sept. 18th, 1931.
Frederic N. Kerr	Dec. 2nd, 1926.	June 2nd, 1930.
Channell Law	Nov. 16th, 1876.	May 4th, 1931.
Thomas Mercer	Dec. 5th, 1889.	July 5th, 1931.
Matthew M. Pattison Muir	Feb. 16th, 1871.	Sept. 2nd, 1931.
Samuel Parrish	May 4th, 1893.	July 29th, 1931.
Madho Prasad	June 19th, 1924.	Feb. 3rd, 1931.
Edward E. Price	Feb. 15th, 1923.	July 21st, 1931.
Akella S. Rao	May 4th, 1922.	Aug. 21st, 1931.
Robert Redwood	June 20th, 1889.	Sept. 24th, 1931.
Henry Droop Richmond	March 3rd, 1887.	Aug. 27th, 1931.
Paul G. W. Typke	Feb. 17th, 1876.	July 17th, 1931.

It was announced that :

1. On June 18th the Council had accepted with great regret the resignation of Professor T. Slater Price from the office of Treasurer

owing to his appointment to the Chair of Chemistry at the Heriot-Watt College, Edinburgh. The Council had expressed its high appreciation of the valuable services rendered to the Society by Professor T. Slater Price as Honorary Secretary from 1924 to 1928, and as Treasurer from 1928 to June 1931.

2. Mr. Emile S. Mond had accepted the appointment to the office of Treasurer, and that Professor T. Slater Price had been appointed to fill the office of Vice-President, rendered vacant by Mr. Mond's acceptance of the Treasurership, until the next Annual General Meeting.

3. Professor J. Kendall had been appointed to serve on the Research Fund Committee in place of the President, and Sir Robert Robertson, K.B.E., on the Finance Committee in place of Mr. E. S. Mond.

4. The Society's Collection of Medals had been increased by the gift of two replicas of the Chevreul Commemoration Medallion from Professor Walter T. Taggart, of Philadelphia, and of the Jubilee Medal of the Society of Chemical Industry from Mr. G. S. W. Marlow. The thanks of the Council have been conveyed to the donors.

5. In connection with the Ordinary Scientific Meetings of the Society which are to be devoted to Discussions, the Council has decided that these Discussions shall be published separately and sent free to Fellows.

It has also been decided that advance proofs of contributions to the Discussions shall be available beforehand. Fellows desiring to receive such advance proofs for the meeting to be held on December 17th are requested to notify the Assistant Secretary before December 3rd in order that the necessary number may be ordered.

6. Applications for the Annual Reports for 1931 should reach the Assistant Secretary by the 31st December, 1931.

7. The Annual Chemical Dinner would be held in the Connaught Rooms, Great Queen Street, W.C. 2, on Thursday, December 10th, 1931, at 7 for 7.30 p.m., and that the price of the tickets is 15*s*. each.

8. The Ninth International Congress of Pure and Applied Chemistry under the Patronage of the Government of the Spanish Republic would be held in Madrid from April 3rd to 10th, 1932.

Mr. J. Glassman was formally admitted a Fellow of the Society.

Forms of recommendation for Fellowship were read for the first time in favour of :

Chhotalal Badrilal Almaula, B.A., B.Sc., Public Health Laboratory, Karachi, India.

John Wilkinson Bee, M.A., 180, Shinfield Road, Reading.
John Godolphin Bennett, 1, Bryanston Mansions, York Street, W. 1.
Blanche Rosemary Carpenter, B.Sc., 96, Wyatt Park Road, Streatham Hill, S.W. 2.
Wesley Crocker, M.Sc., 59, Lord Street, Oswaldtwistle, Accrington.
James Allan Cunningham, 8, Lister Crescent, Fairfield, Liverpool.
George Albert Elliott, M.Sc., Ph.D., 58, Mount Street, Perth, West Australia.
George Denholm Gillies, B.Sc., 12, Bernard Avenue, West Ealing, W. 13.
Eric Gray Hancock, B.A., B.Sc., 46, Beclands Road, S.W. 17.
Herbert Holmes, 2, Wexford Road, Wandsworth Common, S.W. 12.
Sidney Holt, M.Sc.Tech., 44, Pendle Road, Streatham Park, S.W. 16.
Alfred Herbert James, B.Sc., Fonthill, Weald View Road, Tonbridge.
Digby Thomas Leyshon, 20, Grand Avenue, Ely, Cardiff.
John Lewis Moilliet, B.A., University College Hall, Queen's Walk, Ealing, W. 5.
Ruth Mona Murray, B.Sc., Lansdowne House Club, 13, Lyndhurst Gardens, N.W. 3.
David Malcolm Murray-Rust, M.A., B.Sc., Charterhouse, Godalming.
Krishna Shrinivas Nargund, B.A., M.Sc., Gujarat College, Ahmedabad, India.
Michael O'Donnell, 37, Castle Street, Dublin.
John Owen, B.Sc., Trosmarian, Llangoed, Anglesey.
Samuel Richard Pethrick, B.Sc., Kimberley House, Hatherleigh, Devon.
Abdul-Aziz Ahmad Salama, 5, Tanfield Place, Virginia Road, Leeds.
Donald Byard Stanley, B.Sc., 377, Romford Road, Forest Gate, E. 7.
Henry Israel Stonehill, 39, Stepney Green Dwellings, Mile End, E. 1.
Alexander Robertus Todd, B.Sc., 2, Douglas Gardens, Clarkston, Glasgow.
John Todd, B.Sc., Ph.D., 44, Shottskirk Road, Dykehead, Shotts, Lanarkshire.
Henry John Tress, B.Sc., 11, Linden Avenue, Wembley.
Harry Warner, 15, Belmore Road, Hurstville, N.S.W., Australia.
Patrick Francis Whelan, M.Sc., Marin 5, Rio Tinto, Andalucia, Spain.
Alfred Edward Williamson, Ivanhoe, Bilston Road, Aigburth, Liverpool.
Norman Albert Wood, 69, Cambridge Road, Great Crosby, Liverpool.
Gordon Hilliar Wyatt, Perivale, Linden Avenue, Maidenhead.

The following forms of recommendation have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Jack Rowland Atcherley, 21, Turner Avenue, Glenhuntley, Victoria, Australia.
Henri Busch, Ph.D., Weissfrauenstrasse 7–9, Frankfurt, Germany.
Léon Antonin Jaloustre, 117, Rue St. Lazare, Paris,
Morris Goodwin Shepard, 153, Hillside Avenue, Waterbury, Conn., U.S.A.
Walter Thomas Taggart, Prof., B.S., Ph.D., John Harrison Laboratory of Chemistry, The University, Pennsylvania, U.S.A.

The following papers were read:

"The interaction of 2 : 6-dichloro-4-methylquinitrol with methyl and ethyl alcohols." By E. C. S. Jones and J. Kenner.

"The structure of the isomeric platinous diammino-chlorides. Discovery of a third isomeride." By H. D. K. Drew, F. W. Pinkard, W. Wardlaw, and (in part) E. G. Cox.

"The structure of the simple and mixed plato-tetrammine dihalides." By H. D. K. DREW, F. W. PINKARD, and W. WARDLAW.

"Amidines of pharmacological interest." By A. P. T. EASSON and F. L. PYMAN.

The following papers were taken as read :

"Experiments on the synthesis of phenolic aporphines. Part I." By J. M. GULLAND.

"Experiments on the synthesis of phenolic aporphines. Part II. Nitro-derivatives of 3 : 4-dihydroxyphenylacetic acid and of its methyl ethers." By J. M. GULLAND.

"Experiments on the synthesis of phenolic aporphines. Part III. The action of benzyl chloride on nitrophenylacetic acids." By J. M. GULLAND and (MISS) K. I. ROSS.

"Experiments on the synthesis of phenolic aporphines. Part IV. The protection of hydroxyls by the carbethoxyl group." By J. M. GULLAND and C. J. VIRDEN.

"Experiments on the synthesis of phenolic aporphines. Part V. *iso*Corydine." By J. M. GULLAND, (MISS) K. I. ROSS, and N. B. SMELLIE.

"Experiments on the synthesis of phenolic aporphines. Part VI. Laurotetanine." By R. L. DOUGLAS and J. M. GULLAND.

DISCUSSION, THURSDAY, DECEMBER 17TH, 1931, AT 8 P.M.

At the Ordinary Scientific Meeting on Thursday, December 17th, 1931, a Discussion on "The Critical Increment of Homogenous Reactions," will be opened by Mr. C. N. Hinshelwood, F.R.S., and continued by Professor A. J. Allmand, F.R.S., Mr. E. J. Bowen, and Professor E. K. Rideal, F.R.S.

Fellows desiring to receive advance proofs of contributions to the Discussion should apply to the Assistant Secretary before Thursday, December 3rd.

RESEARCH FUND.

A meeting of the Research Fund Committee will be held in December next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Tuesday, December 1st, 1931. Applications from Fellows will receive prior consideration.

All persons who received grants in December 1930, or in December of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by December 1st.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

BRITISH CHEMICAL ABSTRACTS "A" FOR 1932.

(Printed on one side of the page only.)

The Abstracts "A" (Pure Chemistry) for 1932, printed on one side of the page only, will be issued to Fellows who make application by December 31st, 1931. The price is £1 10*s*. A remittance for this amount must accompany each application, and Fellows should state whether they desire their copy to be gummed or ungummed.

TABLE OF ATOMIC WEIGHTS, 1931.

The Table of Atomic Weights prepared by the International Committee can be obtained by Fellows on application to the Assistant Secretary. Price: on cards 1*s*. 6*d*. per dozen, 5*s*. 6*d*. for 50, 10*s*. 6*d*. for 100; on paper 8*d*. per dozen, 2*s*. 3*d*. for 50, 4*s*. for 100.

REPORT OF THE INTERNATIONAL COMMITTEE FOR THE REFORM OF NOMENCLATURE IN ORGANIC CHEMISTRY.

Copies of this report, which appeared in the Journal for June 1931, are available free of charge on application to the Assistant Secretary.

THE NINTH INTERNATIONAL CONGRESS OF PURE AND APPLIED CHEMISTRY TO BE HELD IN MADRID, APRIL 3RD TO 10TH, 1931.

The following provisional programme has been arranged:

Dimanche 3 *Avril.*

Après-midi, 18½ h.	Réception des Congressistes et de leurs familles par le Comité d'Organisation.

Lundi 4 *Avril.*

Matin, 10 h.	Séance solennelle d'ouverture du Congrès.
11–13 h.	Conférence générale sur: "L'Effet Raman en rapport avec la constitution chimique" suivi de discussion.
Après-midi 16–18 h.	Réunion des groupes et sections. Présentation et discussion de memoires.

Mardi 5 *Avril.*	
Matin	Réservé libre aux Congressistes.
Après-midi, 18½ h.	Réception.
Mercredi 6 *Avril.*	
Matin, 9½–13 h.	Conférence générale sur : "Les hauts polimères en Chimie," suivi de discussion.
Après-midi 15½–18 h.	Réunion des groupes et sections.
18½ h.	Réception.
Jeudi 7 *Avril.*	Réservé aux excursions.
Vendredi 8 *Avril.*	
9½–13 h.	Conférence générale sur : "La Chimie des hautes temperatures," suivie de discussion.
Après-midi 16 h.	Première réunion du Conseil de l'Union Internationale de Chimie.
16–18 h.	Réunion des groupes et sections.
21 h.	Banquet official du Congrès.
Samedi 9 *Avril.*	
10 h.	Deuxième réunion du Conseil de l'Union Internationale de Chimie.
10–12 h.	Réunion des Commissions, redaction des conclusions.
Après-midi 16 h.	Séance de Clôture.
17 h.	Assemblée Générale de l'Union Internationale de Chimie.
Dimanche 10 *Avril*	Réservé aux excursions.

THEODORE WILLIAM RICHARDS MEDAL FUND.

It has been decided by the North-eastern Section of the American Chemical Society to establish a Gold Medal to commemorate the many fundamental contributions made to chemistry by Professor T. W. Richards. The medal has been designed by the distinguished sculptor, Cyrus E. Dallin, and will be awarded at intervals of two or three years for conspicuous achievement in chemistry.

A fund of ten thousand dollars will be required to cover the initial expenses and provide a trust fund yielding sufficient income for successive medals and incidental expenses.

Those desiring to be associated with this recurring tribute to the personality and memory of Professor T. W. Richards should send their contributions to Professor Lyman C. Newell, Boston University, 688, Boylston Street, Boston, Mass., U.S.A.

List of papers, or Abstracts thereof, received between June 4th, 1931, and October 15th, 1931. (This List does not include the titles of papers which have appeared in the Journal, or which have been read at an Ordinary Scientific Meeting) :

"Dicarboxylic acids. Part III. A comparative study of the thermal stabilities of some alkylated malonic acids." By F. C. B. MARSHALL.

"Methylene ethers of carbohydrates. Part I. Cellulose methylene ether." By F. C. WOOD.

"Tertiary methylarsines." By W. J. C. DYKE and W. J. JONES.

"Substitution in resorcinol derivatives. Part III. Molecular rearrangement during bromination." By C. SRIKANTIA, M. S. IYENGAR, and K. SANTANAM.

"Aldehydes of 2- and 3-phenanthrol." By A. S. M. NAYAR.

"Colour in relation to chemical constitution of dyes derived from hetero-cyclic dibasic acids." By J. D. TEWARI.

"*m*-Anisil and *m*-anisilic acid." By H. H. HODGSON and W. ROSENBERG.

"Salts and their dehydration." By M. COPISAROW.

"The reduction of copper oxide by hydrogen." By J. S. LEWIS.

"Trypanocidal activity and chemical constitution. Part III. New sulphur derivatives of aromatic organic arsenicals (continued). Gold derivatives of 2-thiolbenziminazole-5-arsonic acid." By J. G. EVERETT.

"The identification of alcohols in very dilute aqueous solution." By H. HENSTOCK.

"Colloidal sulphur." By H. BASSETT and R. G. DURRANT.

"Electrolysis of dilute and neutral copper sulphate solutions. Cathode deposit." By P. K. BANERJEE and L. GUPTA.

"Degradation of quaternary ammonium salts. Part IV. Preliminary kinetic study of molecular rearrangement." By T. THOMSON and T. S. STEVENS.

"Degradation of quaternary ammonium salts. Part V. Relative migratory velocities of substituted benzyl radicles." By T. THOMSON and T. S. STEVENS.

"The attempted isolation of copper benzaldehyde." By D. B. BRIGGS, H. SAENGER, and W. WARDLAW.

"The decomposition of nitrous oxide by cathode rays." By G. R. GEDYE.

"Condensation of benzanilides with *p*-dialkylanilines with the aid of phosphorus oxychloride. A synthesis of *p*-dialkylaminobenzophenones, and the mechanism of the reaction." By R. K. DESHAPANDE and R. C. SHAH.

"A new and direct synthesis of *p*-dialkylaminobenzophenones." By J. S. CHAUBAL and R. C. SHAH.

"Reaction of benzanilide-imidochloride with aromatic tertiary amines." By J. S. CHAUBAL and R. C. SHAH.

"*N*-Alkyldiarylbenzenylamidines." By J. S. CHAUBAL and R. C. SHAH.

"Quinazolonylquinolines." By P. K. BOSE and D. C. SEN.

"The relation of limonene to carvone." By T. S. WHEELER.

"The application of benzidine to the quantitative determination of small amounts of manganese." By R. G. HARRY.

"Perhalide equilibrium in non-aqueous solutions." By E. A. DANCASTER.

"The electrodeposition of chromium from tervalent chromium salt solutions. Part I. Chromium chloride and chromium sulphate baths." By H. T. S. BRITTON and O. B. WESTCOTT.

"Hydrolysis of acetone in ultra-violet light." By E. QURESHI and N. A. TAHER.

"The purification and some physical constants of formamide." By G. F. SMITH.

"On the structure of the naphthalene nucleus." By N. NAKATA.

"Complex catalytic compounds." By H. HENSTOCK.

"The solubility of lithium chloride in water." By J. A. N. FRIEND and A. T. W. COLLEY.

"The migration of acyl groups in *o*-aminophenols. Part II." By F. BELL.

"Physical properties and chemical constitution. Part I. Atomic refractivities and some observations on the parachor." By J. D. A. JOHNSON.

"The determination of glass-electrode potentials by means of valve potentiometers." By C. MORTON.

"The determination of glass-electrode potentials by means of a null ballistic valve electrometer." By C. MORTON.

"Some dinaphthyl bases. Part I. Reduction of azoxy- and azo-naphthalenes. Isolation of an unsymmetrical hydrazo-compound." By W. M. CUMMING and G. HOWIE.

"Some dinaphthyl bases. Part II. Syntheses and properties." By W. M. CUMMING and G. HOWIE.

"Some nitro-derivatives of naphthalene, tetrahydronaphthalene, and dinaphthyl." By W. M. CUMMING and G. HOWIE.

"Reactions of some azoxy- and azo-compounds with benzyl alcohol, benzaldehyde, and quinoline." By W. M. CUMMING and G. HOWIE.

"Some derivatives of kojic acid." By J. W. ARMIT and T. J. NOLAN.

"The formation of thionaphthindole. Part II." By E. W. MCCLELLAND and J. L. D'SILVA.

"Physico-chemical studies of complexes involving weak acids. Part III. Conductometric and potentiometric titrations of metallic acetates." By H. T. S. Britton and F. H. Meek.

"The action of phenylhydrazine and of thiourea on aliphatic nitro-compounds." By A. K. Macbeth and W. B. Orr.

"The specific heats of sodium carbonate solutions and the heats of solution of sodium carbonate." By J. C. Swallow and S. Alty.

"Attempts to find new anti-malarials. Part VI. Derivatives of 2-β-aminoethylquinoline." By W. O. Kermack and W. Muir.

"The catalytic action of hydrogen on the carbon monoxide flame." By C. E. H. Bawn and W. E. Garner.

"The association of aromatic compounds in solution." By D. L. Hammick.

"Studies in the olefin series. Part I. Synthesis of α-olefins." By R. Wilkinson.

"Synthesis of a new disaccharide, neotrehalose." By W. N. Haworth and W. J. Hickinbottom.

"Polysaccharides. Part IX. Evidence of the pyranose structure of xylan." By W. N. Haworth and E. G. V. Percival.

"The structure of 2 : 3 : 4-trimethyl glucose." By W. Charlton, W. N. Haworth, and R. W. Herbert.

"Conversion of 2 : 3 : 4-triacetyl α-methylglucoside into 2-methyl 3 : 4 : 6-triacetyl α-methylglucoside." By W. N. Haworth, E. L. Hirst, and (Miss) E. G. Teece.

"The third variety of triacetyl methylrhamnoside." By W. N. Haworth, E. L. Hirst, and H. Samuels.

"Walden inversion in the α-glucoheptose series. The preparation of new derivatives and the determination of the structure of methyl-α-glucoheptoside." By W. N. Haworth, E. L. Hirst, and M. Stacey.

"The halogenation of phenolic ethers and anilides. Part II. Additional velocity measurements in 99% acetic acid." By A. E. Bradfield and B. Jones.

"The halogenation of phenolic ethers and anilides. Part III. The "phase and steric" factor." By A. E. Bradfield, W. O. Jones, and F. Spencer.

"The action of chlorine on benzene in the vapour phase." By C. A. Smale, R. N. Thompson, and T. S. Wheeler.

"The action of chlorine on toluene in the vapour phase." By J. Mason, C. A. Smale, and T. S. Wheeler.

"The constituents of Indian turpentine from *Pinus longifolia*, Roxb. Part VI. The autoxidation of *d*-Δ^3-carene." By J. Owen and J. L. Simonsen.

"The ternary system potassium permanganate–potassium fluoborate–water." By R. C. Ray and K. K. Chatterji.

"The classification of coals by means of their reactivity towards alkaline permanganate." By W. Francis.

"Molecular complexity of supercooled acetic acid and of benzene by surface tension measurements." By H. Fry.

"4-Nitro-5-(3-pyridyl)pyrazole, a new oxidation product of nicotine. Part I." By G. A. C. Gough and H. King.

"Trypanocidal action and chemical constitution. Part X. Aromatic arsonic acids containing amide groups." By A. Cohen, H. King, and (Miss) W. I. Strangeways.

"Attempts to find new antimalarials. Part VII. Quinoline compounds having a side-chain in the 4-position containing two or more nitrogen atoms." By W. O. Kermack and J. F. Smith.

"Synthetical experiments in the chromone group. Part V. Chromones derived from 2-phenylacetyl-1-naphthol and 2-benzylacetyl-1-naphthol." By U. S. Cheema and K. Venkataraman.

"Synthetical experiments in the chromone group. Part VI. 2-Styrylchromones." By U. S. Cheema, K. C. Gulati, and K. Venkataraman.

"The decomposition of ammonium nitrate." By M. S. Shah and T. M. Oza.

"A new oxide of rhenium. Rhenium pentoxide." By H. V. A. Briscoe, P. L. Robinson, and A. J. Rudge.

"The alleged thallous thio per-rhenate." By H. V. A. Briscoe, P. L. Robinson, and E. M. Stoddart.

"Properties of conjugated compounds. Part XIV. An examination of the homogeneity of seven monomethyl- and dimethyl-butadienes." By E. H. Farmer and F. L. Warren.

"Properties of conjugated compounds. Part XV. Influence of the position of alkyl substitution on the refractivity of the monomethyl- and dimethyl-butadienes." By E. H. Farmer and F. L. Warren.

"Properties of conjugated compounds. Part XVI. The dipole moments and atomic polarisation of the monomethyl- and dimethyl-butadienes." By E. H. Farmer and F. L. Warren.

"Properties of conjugated compounds. Part XVII. The determination of the dipole moments of the monomethyl- and dimethyl-butadienes (continued)." By E. H. Farmer and F. L. Warren.

"Phase-rule studies on metallic thiocyanates Part II. The systems $AgCNS–NaCNS–H_2O$, $AgCNS–KCNS–H_2O$ and $AgCNS–NH_4CNS–H_2O$ at 25°." By V. J. Occleshaw.

"Investigation on the formation and stability of β-lactones." By A. KANDIAH.

"Dehydrogeranic acid." By R. S. CAHN, A. R. PENFOLD, and J. L. SIMONSEN.

"A potentiometric investigation of electrolytic dissociation. Part I. Cadmium halides." By H. L. RILEY and V. GALLAFENT.

"The constitution of benzfurazan and benzurazan oxide." By D. L. HAMMICK, W. A. M. EDWARDES, and E. R. STEINER.

"The reducing action of bornyl magnesium chloride." By I. R. SHERWOOD and W. F. SHORT.

"A compound of nitrobenzene and sulphuric acid." By I. MASSON.

"The dielectric polarisation of hydrogen chloride in solution. Part I. Benzene, *cyclo*hexane, and carbon tetrachloride." By F. FAIRBROTHER.

"The action of halogens on polycyclic indole derivatives. Part I. The reaction between bromine and the acyl derivatives of tetrahydrocarbazole." By S. G. P. PLANT and (MISS) M. L. TOMLINSON.

"The action of halogens on polycyclic indole derivatives. Part II. The bromination of the acyl derivatives of benzopentindole." By S. G. P. PLANT and (MISS) M. L. TOMLINSON.

"A new method of preparing a picrolonate from a picrate as a means of identification." By L. KLEIN and J. F. WILKINSON.

"The photolysis of potassium ferrioxalate solutions. Part III." By A. J. ALLMAND and K. W. YOUNG.

"The calculation of degrees of dissociation of weak electrolytes." By W. H. BANKS.

"The inhibitory effect of substituents in chemical reactions. Part II. The reactivity of the –NCS group in substituted aryl thiocarbimides." By D. W. BROWNE and G. M. DYSON.

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PROCEEDINGS

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Ordinary Scientific Meeting, Thursday, November 5th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death on August 30th, of Robert Grant, who was elected a Fellow of the Society on December 4th, 1919.

It was announced that delegates would represent the Society for the year 1932 as follows :

Professor C. S. Gibson, Mr. A. J. Greenaway, Dr. J. T. Hewitt, and Professor G. T. Morgan, together with the Treasurer (*ex officio*), on the Bureau of Chemical Abstracts.

Professor C. S. Gibson, Sir William J. Pope, and Professor J. F. Thorpe on the Federal Council for Chemistry.

Dr. F. B. Kipping was formally admitted a Fellow of the Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Sekharipuram Venkateswarier Anantakrishnan, B.A., 13, Temple Fortune Hill, Golder's Green, N.W. 11.
Edward James Boorman, A.R.C.S., 6, Purbeck Road, Chatham, Kent.
Arthur Cecil Bottomley, M.Sc., Ph.D., Hulme Hall, Victoria Park, Manchester.
Eric George Hemphill Carter, B.Sc., 183, Twickenham Road, Leytonstone, E. 11.
Ernest Harrison Coulson, B.Sc., A.R.C.S., 50, Greenvale Road, Eltham, S.E. 9.
Malcolm Crawford, B.Sc., c/o Monro, 296, Bath Street, Glasgow.
Dora Anne Duff, B.Sc., 29, Cheyne Walk, Hendon, N.W. 4.
Robert Albert Ernest Galley, B.Sc., A.R.C.S., 42, Ravensbourne Park, Catford, S.E. 6.
Henry Isaac Hall, B.A., St. John's College, Oxford.
Edward Francis Hartree, A.R.C.S., 23, Coleridge Walk, Golder's Green, N.W. 11.
Winifred Rosa Ashby Hollens, B.Sc., 89, Colliers Water Lane, Thornton Heath, Surrey.
Edward David Hughes, B.Sc., Ph.D., Gwalia House, 97, Gower Street, W.C. 1.
Richard Lewis Jones, B.Sc., c/o Miss A. A. Heddercott, 29, Girdler's Road, West Kensington, W. 14.

Edwin Marshall Meade, A.R.C.S., Royal College of Science, S. Kensington, S.W. 7.

Hermann Günther Gottschaldt Mohrhenn, B.Sc., 4, Clifton Road, Crouch End, N. 8.

George Maxwell Richardson, M.Sc., Ph.D., Central Y.M.C.A., Tottenham Court Road, W.C. 1.

Eliot Harry Roberts, Galestone College, Upper Norwood, S.E. 19.

John Robertson, B.Sc, 21, Borden Road, Glasgow, W. 3.

James Hilton Rogers, 83, Plymouth Road, Penarth, Glam.

Henry Norman Rydon, A.R.C.S., 3, Mentmore Close, Northwick Park, Harrow.

Abdul Baki Mohammed Solieman Sheikh, M.Sc., 9, Fairfax Road, Bedford Park, W. 4.

Margaret Sarah Smith, B.Sc., 7, Albert Road, Brighton.

Bernard Joseph Styles, 86, St. Peter Street, Hackney Road, E. 2.

Norton James Hugh Wallis, B.Sc., A.R.C.S., 36, Sydenham Road, Cotham, Bristol.

John Stephen Watt, M.Sc., University College, Oxford.

Christopher Lumley Wilson, B.Sc., 90, Highgate Road, N.W. 5.

Henry George Wright, 14, Lesbia Road, Lower Clapton, E. 5.

The following papers were read :

"A potentiometric investigation of electrolytic dissociation. Part I. Cadmium halides." By H. L. RILEY and V. GALLAFENT.

"Dehydrogenation of pyridine by anhydrous ferric chloride." By G. T. MORGAN and F. H. BURSTALL.

"The structure of glutaconic acids and esters. Part II. α-Substituted derivatives of β-methylglutaconic acid." By G. A. R. KON and E. M. WATSON.

"Studies in gaseous adsorption. Part II. The form of the heat of adsorption curve for hydrogen on platinum." By E. B. MAXTED and N. HASSID.

"Studies in gaseous adsorption. Part III. The heterogeneity of catalytic surfaces." By E. B. MAXTED.

Ordinary Scientific Meeting, Thursday, November 19th, 1931, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of :

	Elected.	*Died.*
Walter Francis Reid	Dec. 15th, 1881.	Nov. 18th, 1931.
John Baldwin Shoesmith	Feb. 15th, 1923.	Nov. 18th, 1931.

The PRESIDENT announced that in addition to the two Discussions already announced for December 17th, 1931, and May 19th, 1932, the Ordinary Scientific Meeting on Thursday, February 18th, 1932, will be devoted to a discussion on "The Significance of Velocity

Measurements in Relation to the Benzene Substitution Problem" which is to be opened by Mr. A. E. Bradfield.

The following were formally admitted Fellows of the Chemical Society: Messrs. E. A. R. Bousfield, F. G. Angell, and F. C. Clapham.

Forms of Recommendation for Fellowship were read for the first time in favour of:

William Owen Jones, Ph.D., A.I.C., 16, Water Street, Penmaenmawr, North Wales.
Thomas Fotheringham Macrae, Ph.D., 140, Ebury Street, S.W. 1.
John Alexander Mair, Ph.D., 53, Cunningham Street, Glasgow.
Arthur Francis Boughton Neal, B.A., Fermor House, Crowborough, Sussex.
James Eric Wynfield Rhodes, B.Sc., A.I.C., 35, Fielding Crescent, Green Lane, Blackburn.
Gertrude Maud Robinson, M.Sc., 13, Norham Road, Oxford.
Margot Elaine Thompson, B.Sc., 174, Cromwell Road, Earl's Court, S.W. 5.
Muriel Louise Tomlinson, B.A., Kingswood, Lapworth, Warwickshire.

The following papers were read:

"Dehydrogeranic acid." By R. S. Cahn, A. R. Penfold, and J. L. Simonsen.

"The nitration of oximes." By W. Charlton, J. C. Earl, J. Kenner, and A. A. Luciano.

"10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part XVII. Constitution of the nitro-derivatives produced from 3-nitrodiphenylamine-6′-arsonic acid and its homologues." By C. S. Gibson and J. D. A. Johnson.

"Investigations of the olefinic acids. Part VI. Lactonisation and allied additive reactions. Part I. The system, $\alpha\beta$-acid-$\beta\gamma$-acid-γ-lactone." By R. P. Linstead.

DISCUSSION, THURSDAY, DECEMBER 17TH, 1931, AT 8 P.M.

At the Ordinary Scientific Meeting on Thursday, December 17th, 1931, a Discussion on "The Critical Increment of Homogeneous Reactions," will be opened by Mr. C. N. Hinshelwood, F.R.S., and continued by Professor A. J. Allmand, F.R.S., Mr. E. J. Bowen, and Professor E. K. Rideal, F.R.S.

Fellows desiring to receive advance proofs of contributions to the discussion should apply to the Assistant Secretary before Thursday, December 3rd.

THE LIBRARY.

The Library will be closed for the Christmas Holidays from Wednesday, December 23rd, at 1 p.m., until Tuesday, December 29th, at 10 a.m.

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List of papers, or abstracts thereof, received between October 15th and November 19th, 1931. (This list does not include the titles of papers which have appeared in the Journal, or which have been read at an Ordinary Scientific Meeting.)

"Neutral salt addition compounds of β-alanine." By H. KING and G. V. RUTTERFORD.

"Hydroxyanthraquinones. Part I. A synthesis of purpurin." By P. G. MARSHALL.

"The saponification of diesters." By M. RITCHIE.

"The oxidation of caoutchouc, gutta-percha, and balata with hydrogen peroxide." By J. A. MAIR and J. TODD.

"The chlorination of anilides. Part VII. The constitutional influence of the acyl group upon side-chain reactivity." By G. WILLIAMS and S. P. HUGHES.

"The rearrangement of hydroxy-sulphones. Part I." By A. A. LEVI, H. C. RAINS, and S. SMILES.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part VIII. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2-chloro-4-nitroaniline." By F. M. ROWE and C. DUNBAR.

"Intermetallic compounds formed in mercury. Part I. The tin–copper system." By P. V. F. CAZALET, A. S. RUSSELL, and N. M. IRVIN.

"Intermetallic compounds formed in mercury. Part II. The zinc–copper system." By A. S. RUSSELL, N. M. IRVIN, and P. V. F. CAZALET.

"Degradation of quaternary ammonium salts. Part IV. Molecular rearrangements in related sulphur compounds." By T. THOMSON and T. S. STEVENS.

"Derivatives of phenylaminocamphor." By F. L. ROSE.

"Determination of the rate of rise of pressure in the combustion of some gas–oxygen mixtures." By C. CAMPBELL, W. B. LITTLER, and C. WHITWORTH.

"The conversion of *d*-β-octyl chloroformate into dextrorotatory β-chloro-octane and the action of the chlorides and oxychloride of phosphorus on *d*-β-octanol." By A. H. J. HOUSSA and H. PHILLIPS.

"Constitutional factors controlling prototropic changes in carbonyl compounds. Part I. The relative speeds of enolisation of acetone and bromoacetone and the effect of the acid catalyst." By E. D. HUGHES, H. B. WATSON, and E. D. YATES.

"Binary systems comprising urea with certain metallic nitrates." By W. J. HOWELLS.

"Metallic hydroxy-acid complexes. Part VI. Complexes of lead and zinc." By (MISS) E. E. WARK.

"The synthesis and orientation of trichloroanthraquinones and amino-disulphonates of anthraquinone. Part II." By A. A. GOLDBERG.

"The double compound of aluminium chloride with hydrogen cyanide." By L. E. HINKEL and R. T. DUNN.

"On active nitrogen. Part IX. The electrical conductivity of active nitrogen." By E. J. B. WILLEY and W. A. STRINGFELLOW.

"On active nitrogen. Part X. A supposedly oxidisable variety of nitrogen." By E. J. B. WILLEY and S. G. FOORD.

"The reduction of heteronuclear nitroanthraquinonesulphonates." By A. A. GOLDBERG.

"Strychnine and brucine. Part XIII. Note on dihydroindolylpropionic and dihydroindolylbutyric acids." By B. K. BLOUNT and R. ROBINSON.

"Studies in chemotherapy (antimalarials). Part II. Pyrryl methyl ketones and their transformation to indoles." By A. U. QURESHI, J. S. AGGARWAL, and J. N. RÂY.

"The action of Grignard solutions on the 10-methoxyanthrones." By E. DE B. BARNETT.

"The reaction at the quinhydrone electrode in methyl alcohol." By A. MACFARLANE.

"Cyclic esters of sulphuric acid. Part II. The constitution of methylene and glyoxal sulphates, and the reaction of methylene sulphate with tertiary bases." By W. BAKER and (in part) F. B. FIELD.

"The formation and stability of *spiro*-compounds. Part XIV. The effect of the methyl*cyclo*hexane ring on the carbon tetrahedral angle." By R. D. DESAI.

"The chemistry of alkyl*cyclo*pentanones. Part II. The effect of the methyl*cyclo*pentane ring on the carbon tetrahedral angle." By R. D. DESAI.

"Dihydroresorcinols. Part I. The alkylation of substituted dihydroresorcinols." By R. D. DESAI.

"Investigations on alkylaconitic acids." By R. D. DESAI.

"A convenient method of preparing anhydrous aluminium bromide." By R. P. BELL.

"Effect of replacement of methyl by alkyl and aryl on the stability of the xanthate molecule." By (MISS) I. M. MCALPINE.

"Hydrolysis and decomposition of menthyl dixanthide and of bornyl dixanthide." By (MISS) I. M. MCALPINE.

"Effect of solvents on the optical rotation of menthene, bornylene, and borneol." By (MISS) I. M. MCALPINE.

"Effect of solvents on the optical rotation of esters of menthyl and bornyl xanthic acid, and on menthyl and bornyl dixanthide." By (MISS) I. M. MCALPINE.

"The physical properties of nitrobenzene in the neighbourhood of the melting point." By N. B. MASSEY, F. L. WARREN, and J. H. WOLFENDEN.

"Potassium rheni-iodide." By H. V. A. BRISCOE, P. L. ROBINSON, and A. J. RUDGE.

"Reactivity of *peri*-substituted naphthalenes. Part I. Displacement of the nitro-group in 8-nitro-1-naphthoic acid by thionyl halides to form 8-chloro- and 8-bromo-naphthoic acids." By H. G. RULE and A. J. G. BARNETT.

"Ring-closure studies in the piperidine series." By G. R. CLEMO, J. ORMSTON, and G. R. RAMAGE.

"The lupin alkaloids. Part V." By G. R. CLEMO, G. R. RAMAGE, and R. RAPER.

"The formation of thionaphthindoles. Part III. The synthesis of thionaphthindoles from 3-oxy-1-thionaphthens." By E. W. MCCLELLAND and J. L. D'SILVA.

"Preliminary synthetical experiments in the morphine group. Part I." By R. ROBINSON and S. SUGASAWA.

"Preliminary synthetical experiments in the morphine group. Part II." By R. ROBINSON and S. SUGASAWA.

"Strychnine and brucine. Part XIV. Oxidation of hexahydrostrychnine." By L. H. Briggs and R. Robinson.

"Cyanine dyes and related compounds." By (Miss) F. M. Hamer, I. M. Heilbron, J. H. Reade, and H. N. Walls.

"Dicarbocyanines. A new series of cyanine dyes." By S. Beattie, I. M. Heilbron, and F. Irving.

"Studies in the sterol group. Part XI. The formation of ethers of ergosterol and its derivatives." By I. M. Heilbron and J. C. E. Simpson.

"Polycyclic aromatic hydrocarbons. Part VIII. The chemistry of 1 : 2 : 5 : 6-dibenzanthracene." By J. W. Cook.

"Polycyclic aromatic hydrocarbons. Part IX. The chemical nature of chrysogene, the colouring matter of the higher coal-tar hydrocarbons." By J. W. Cook.

"The kinetics of reactions involving collisions between solute and solvent molecules." By E. A. Moelwyn-Hughes.

"Search for trypanocidal activity. Derivatives of dehydrothio-*p*-toluidinesulphonic acid and of 3-aminocarbazoledisulphonic acid." By G. T. Morgan and J. G. Mitchell.

"Nitration of carbazole." By G. T. Morgan and J. G. Mitchell.

"Physico-chemical studies of complex formation involving weak acids. Part IV. Alkali solutions of lanthanum tartrate." By H. T. S. Britton and W. E. Battrick.

"Capillary activity in aqueous solution." By H. Mills.

"Estimation of acetic acid in presence of stannic chloride." By C. S. Murty and S. Husain.

"The vapour pressure of ββ′-dichlorodiethyl sulphide." By S. A. Mumford, J. W. C. Phillips, and W. C. Ball.

"Higher aliphatic compounds. Part II. The system cetyl iodide–octadecyl iodide." By J. C. Smith.

"Trypanocidal action and chemical constitution. Part XII. Arylthioarsinites derived from κ-thiolundecoic acid." By A. Cohen.

"The dissociation constants of organic acids. Part V. The mobility of the hydrogen ion at 18° and at 25°." By G. H. Jeffery and A. I. Vogel.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 3rd, 1931.

Almaula, Chhotalal Badrilal, Public Health Laboratory, Karachi (Sind). Indian. Chemical Assistant, Public Health Laboratory, Karachi. B.A. in 1919 with Chemistry and Physics, and B.Sc. in 1920 with Chemistry

as principal subject at the University of Bombay. Superintendent, Govt. Casein Demonstration Factory, Anand, Nov. 1920 to Aug. 1921. Asst. Chemist, Depart. of Industries, Bombay, Aug. 1921 to April 1924. Asst. Chemist in the Laboratory of Messrs. J. Hughes & Davies, Bombay, April 1924 to Feb. 1925. Chemical Asst., Public Health Laboratories, Feb. 1925 to date, and as such Public Analyst for the city of Karachi. (*Signed by*) S. J. Shah, A. H. Nanavati, M. S. Shah.

ANANTAKRISHNAN, SEKHARIPURAM VENKATESWARIER, 13, Temple Fortune Hill, Golder's Green, N.W. 11. Indian. Student. B.A. (Hons.) of the Madras University. Desire to receive the publications of the Society, attend the meetings, and use the Library. (*Signed by*) C. K. Ingold, J. N. E. Day, M. S. Kazi.

BEE, JOHN WILKINSON, 180, Shinfield Road, Reading, Berks. British. University Lecturer in Agricultural Chemistry. M.A. Cambridge; Diploma in Agriculture, Cambridge. Research in Agricultural Chemistry, Cambridge, 1926–28. Lecturer in Agricultural Chemistry, Reading University, 1928–31. (*Signed by*) H. A. D. Neville, D. Roy Maxted, W. F. K. Wynne-Jones.

BENNETT, JOHN GODOLPHIN, 1, Bryanston Mansions, York Street, W. 1. British. Chemical Engineering Student. Student. Captain Royal Engineers (ret.). (*Signed by*) T. J. Drakeley, J. R. I. Hepburn, H. J. S. King, D. H. Richardson.

BOORMAN, EDWARD JAMES, 6, Purbeck Road, Chatham, Kent. British. Student. A.R.C.S. (at Royal College of Science), 1st Class. Student, Royal College of Science, Oct. 1929 to Oct. 1931. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

BOTTOMLEY, ARTHUR CECIL, Hulme Hall, Victoria Park, Manchester. British. Research Chemist in Cancer Research Dept., Manchester University. M.Sc., Ph.D. (Manchester). Bottomley and Robinson, *J.C.S.*, 1927, 2785; Bottomley, Lapworth, and Walton, *ibid.*, 1930, 2215. (*Signed by*) Arthur Lapworth, D. H. Hey, G. N. Burkhardt.

CARPENTER, BLANCHE ROSEMARY, 96, Wyatt Park Road, Streatham Hill, S.W. 2. British. Research Student. B.Sc. Pass, Special, London. (*Signed by*) E. E. Turner, Mary S. Lesslie, Elizabeth E. J. Marler.

CARTER, ERIC GEORGE HEMPHILL, 183, Twickenham Road, Leytonstone, E. 11. British. Chemistry Research Student. B.Sc. (2nd Class Hons., London). For three years a Chemistry Student at East London College. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson, H. D. K. Drew.

COCKER, WESLEY, 59, Lord Street, Oswaldtwistle, Accrington, Lancs. British. Assistant to Professor of Organic Chemistry. B.Sc. (1928) (1st Class Hons.); M.Sc. (1929), Manchester. Research Student. Work on (1) Reaction mechanisms, and (2) Amino-acids. Dalton Scholar, 1930; Beyes Fellow, 1931. Various papers to *J.C.S.* and also *Recueil de Pays Bas* (Burkhardt and Cocker, July 1931). Cocker, Lapworth, and Walton, *J.C.S.*, 1930, 440; Cocker and Lapworth, *ibid.*, 1931, 1391; Cocker, Lapworth, and Peters, *ibid.*, 1931, 1382. (*Signed by*) Arthur Lapworth, G. N. Burkhardt, D. H. Hey.

COULSON, ERNEST HARRISON, 50, Greenvale Road, Eltham, S.E. 9. British. Research Student. Bachelor of Science (London, 1st Class); Associate of Royal College of Science (1st Class). Laboratory Assistant, Research Department, Royal Arsenal, Woolwich, June 1926 to Oct. 1929. Student, Royal College of Science, Oct. 1929 to Oct. 1931. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

CRAWFORD, MALCOLM, c/o Monro, 296, Bath Street, Glasgow, C. 2. Scottish. Research Student, Glasgow University. B.Sc. (1st Class Hons.) in Applied Chemistry, Glasgow University. At present carrying out research work in Organic Chemistry at Glasgow University. (*Signed by*) T. S. Patterson, S. Horwood Tucker, T. S. Stevens.

CUNNINGHAM, JAMES ALLAN, 8, Lister Crescent, Fairfield, Liverpool. British. Managing Director. Wholesale Manufacturing Chemist. (*Signed by*) James Williamson, H. Humphreys Jones, J. E. Whipp.

DUFF, DORA ANNE, 29, Cheyne Walk, Hendon, N.W. 4. British. Research Student. B.Sc. (London University). Student of chemistry for three years at University College, London, being research student the third year. (*Signed by*) C. K. Ingold, O. L. Brady, R. J. W. Le Fèvre.

GALLEY, ROBERT ALBERT ERNEST, 42, Ravensbourne Park, Catford, S.E. 6. British. Research Student. B.Sc. (London); A.R.C.S. Junior Technical Assistant at the Fuel Research Station (D.S.I.R.), 1926–29. "Polycyclic Aromatic Hydrocarbons," Part V (with J. W. Cook), *J.C.S.*, 1931, 2012. (*Signed by*) E. H. Farmer, R. P. Linstead, J. W. Cook.

GILLIES, GEORGE DENHOLM, 12, Bernard Avenue, West Ealing, W. 13. British. Assistant Examiner, H.M. Patent Office. B.Sc. (Special Chemistry, 1st Class Hons.), London University. Obtained at Battersea Polytechnic. Two years' experience as Laboratory Assistant at Gas Light & Coke Co., Nine Elms, and two years' experience in works laboratory of Kodak, Ltd., at Wealdstone, Middlesex. (*Signed by*) J. Kenyon, F. Bell, C. W. Davies.

GRIFFITH, BRINLEY, "Gwynfa," Edward Close, Brentwood Road, Romford. British. B.Sc., Bristol. Science Master, Ilford Modern School. Student, University of Bristol. Am desirous of keeping in touch with the developments of modern chemistry. (*Signed by*) F. W. Rixon, M.Taylor, R. C. Menzies.

HALL, HENRY ISAAC, St. John's College, Oxford. British. Research Student in Chemistry. B.A., Oxford. Now engaged in research at Oxford. (*Signed by*) S. G. P. Plant, E. Hope, J. C. Smith.

HANCOCK, ERIC GRAY, 46, Beclands Road, S.W. 17. British. Research Student at King's College, London, under Prof. A. J. Allmand. B.A., B.Sc. (Oxon). Scholar of St. John's College, Oxford, Oct. 1927 to July 1931. B.A., 1930; B.Sc., 1931; 1st Class in Final Honours School of Natural Science, July 1931. Worked one year on the "Hydrolysis of Sulphur Monochloride" (unpublished) under D. Ll. Hammick. (*Signed by*) D. Ll. Hammick, Frederick M. Brewer, A. J. Allmand.

HARTREE, EDWARD FRANCIS, 23, Coleridge Walk, Golder's Green, N.W. 11. British. Research Student. A.R.C.S. Student at the Royal College of Science since Oct. 1929. Vacational employment at Baird and Tatlock's research laboratory. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

HOLLENS, WINIFRED ROSA ASHBY, 89, Colliers Water Lane, Thornton Heath, Surrey. English. Student. B.Sc. General, B.Sc. Special Chemistry, 1st Class, London. Desire to attend meetings and receive the Journals. (*Signed by*) James F. Spencer, E. E. Turner, Mary S. Lesslie.

HOLMES, HERBERT, "Maroyris," 2, Wexford Road, Wandsworth Common, S.W. 12. English. Assistant Analytical Chemist. Desire to receive the Society's *Journal*, and to be able to attend the meetings of the Society, as well as to be able to use the Library. (*Signed by*) Henry J. S. Sand, A. M. Ward, F. G. Kny Jones.

HOLT, SIDNEY, 44, Pendle Road, Streatham Park, S.W. 16. British,

English. Chemist. M.Sc. (Tech.), Manchester. Department of Scientific and Industrial Research. "Studies in Naphthalene Series, Part III," G. B. Jambuserwala, S. Holt, and F. A. Mason, *J.C.S.*, 1931, 373, and F. A. Mason and S. Holt, *ibid.*, 1931, 377. (*Signed by*) C. S. Gibson, John D. Johnson, L. A. Elson, B. Levin.

HUGHES, EDWARD DAVID, Gwalia House, 97, Gower Street, W.C. 1. British. Research Student. B.Sc., Ph.D. (Wales). Two years' research at Bangor University. One year at University College, London. *J.C.S.*, 1929, 1945–54; *ibid.*, 1930, 1733–40 (both with Dr. H. B. Watson). (*Signed by*) C. K. Ingold, R. J. W. Le Fèvre, O. L. Brady.

JANES, ALFRED HERBERT, Fonthill, Weald View Road, Tonbridge, Kent. British, by birth. Student. B.Sc. Hons. (London). Engaged in Research, in London University (East London College). (*Signed by*) J. R. Partington, H. D. K. Drew, D. C. Jones.

JONES, RICHARD LEWIS, c/o Miss A. A. Heddercott, 29, Girdler's Road, W. Kensington, W. 14. British. B.Sc. (2nd Class Hons.), Glasgow. Student. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

LA VALETTE, FRANK ERIC, c/o St. James College, 165, Lower Circular Road, Calcutta, India. Domiciled European. Headmaster, St. James College. M.Sc. (Calcutta). Teacher of Physics and Chemistry in the Cambridge Classes of the School. (*Signed by*) J. N. Mukherjee, J. C. Bardhan, P. C. Rây.

LEYSHON, DIGBY THOMAS, 20, Grand Avenue, Ely, Cardiff. British. Head Brewer and Chemist (Ely Brewery Co., Ltd., Ely, Cardiff). Associate of the Institute of Brewing (by examination), 1925. Honoursman and Silver Medallist with full Technological Certificate in Brewing of City and Guilds of London Institute, 1925. Studied Chemistry under Professor W. J. Jones at the University College, Cardiff, 1921–23, passing the Final B.Sc. examination of the University in Organic, Inorganic, and Physical Chemistry, but did not complete B.Sc. Degree. Formerly Technical Assistant to the late Dr. R. V. Stanford for period 1919–21 at the Laboratories of the Cardiff City Mental Hospital. Served with the Public Schools Brigade and Royal Flying Corps, 1915–18. I desire to obtain the Journals of the Chemical Society. (*Signed by*) H. Ll. Bassett, W. C. Davies, W. J. Jones.

MEADE, EDWIN MARSHALL, Royal College of Science, S. Kensington, S.W. 7. British. Research Student. A.R.C.S. (2nd Class). Student, Royal College of Science, 1929–31. (*Signed by*) G. A. R. Kon, E. H. Farmer, R. P. Linstead.

MOHRHENN, HERMANN GÜNTHER GOTTSCHALDT, 4, Clifton Road, Crouch End, N. 8. British. Research Student. B.Sc. (2nd Class Hons. Chem.), University College, London. Research Student, one year under Prof. C. K. Ingold, D.Sc. (*Signed by*) C. K. Ingold, Henry Terrey, O. L. Brady.

MOILLIET, JOHN LEWIS, Univ. College Hall, Queen's Walk, Ealing, W. 5. Research Student at Univ. College, London. B.A. with Hons. in Chemistry and Phi Beta Kappa, Rice Institute, Houston, Texas, U.S.A. (*Signed by*) Conmar Robinson, Henry Terrey, F. G. Donnan.

MURRAY, RUTH MONA, Lansdowne House Club, 13, Lyndhurst Gardens, N.W. 3. British. Research Student. B.Sc. Pass, Special, London. (*Signed by*) E. E. Turner, Mary S. Lesslie, Elizabeth E. J. Marler.

MURRAY-RUST, DAVID MALCOLM, Charterhouse, Godalming, Surrey. British. Schoolmaster. M.A., B.Sc. (Oxford). Lecturer in Chemistry at Balliol College, Oxford, 1927–31. Papers on Electrical Conductivity of Solutions, published in *Proc. Roy. Soc.* and *J.C.S.* Part author of following: *J.C.S.*, 1930, 2492; 1931, 199, 215. *Ann. Rep.*, 1930, 326. (*Signed by*) C. N. Hinshelwood, E. J. Bowen, H. Hartley.

NAIR, PARAMESWAR VELAYUDHAN, Dyson Perrins Laboratory, Oxford. Hindu (Indian). Research Student (Candidate for the degree of D.Phil. (Oxon.)). B.A., University of Madras; M.Sc. (1st Class), University of Lucknow. (*Signed by*) R. Robinson, K. N. Menon, S. Sugasawa.

NARGUND, KRISHNA SHRINIVAS, Gujarat College, Ahmedabad, India (London address: 9, Fairfax Road, Bedford Park, W. 4.) Indian. Assistant Lecturer in Chemistry, Gujarat College for the last five years. B.A. (Hons.), Bombay; B.Sc. (1st class), Bombay; M.Sc. (distinction), Bombay; A.I.I.Sc. (a research diploma of the Indian Institute of Science, Bangalore). No papers in *J.C.S.*, but I have published one paper in *Journ. Ind. Inst. Science*, Vol. 9, Part VII, and another in *J. Ind. Chem. Soc.*, April 1931. (*Signed by*) G. A.R. Kon, R. D. Desai, R. S. Thakur.

O'DONNELL, MICHAEL, Dispensary, 37, Castle Street, Dublin. Irish. Resident Medical Officer. L.A.H.D., L.P.S.I., Dublin. Ex. Examiner, Apothecaries Hall, Dublin. (*Signed by*) Sydney Young, Emil A. Werner, Thos. Nolan.

OWEN, JOHN, "Trosmarian," Llangoed, Anglesey, N.W. British. B.Sc. (Wales), 1st Class Hons. in Chemistry with Agricultural Chemistry (1930). Research Student (Organic Chemistry). (*Signed by*) J. L. Simonsen, A. E. Bradfield, F. G. Soper, R. S. Cahn.

PETHRICK, SAMUEL RICHARD, Kimberley House, Hatherleigh, Devon. British. Demonstrator. B.Sc. (London), while at University College, London. At present a Demonstrator in Chemistry at University College, Southampton, and doing research at same institution. (*Signed by*) D. R. Boyd, A. E. Clarence Smith, A. I. Vogel.

POLLARD, JACK, 1, Brunel Street, Burnley, Lancs. British. Assistant Works Manager, Oswald Street Gas Works, Burnley. I have passed examinations in Organic, Inorganic, and Physical Chemistry to standard required by Institution of Gas Engineers for Diploma. I served Jan. to July 1928 under Major Ross, F.I.C., F.C.S., Borough Analyst. Assistance in design and control of chemical works plant and gas-making plants. I wish to continue my chemical studies and to take advantage of your technical publications. (*Signed by*) J. Herbert Clegg, D. V. Hollingworth, J. W. Bell.

RICHARDSON, GEORGE MAXWELL, Central Y.M.C.A., Tottenham Court Road, W.C. 1. British. Research Student. M.Sc. (N.Z.); Ph.D. (London). Joint publications: *J.C.S.*, 1928, 1775; *Biochem. J.*, 1929, **23**, 68, 624, 1242. (*Signed by*) C. R. Harington, A. C. Chibnall, E. H. Farmer.

ROBERTS, ELIOT HARRY, Galestone College, Upper Norwood, S.E. 19. British. Schoolmaster. H.L.C. (Oxon), Chemistry, Theoretical and Practical (Inter-Science standard), Dyson Perrins Laboratory, South Parks Road, Oxford. Registered Student, Institute of Chemistry, Inter. A.I.C. course (equivalent to Inter-Hons. B.Sc.). Faculty of Technology, University of Manchester, six years' experience. Senior Science Master, Heaton Moor College (recognised by the B. of E.), Heaton Moor, Stockport. Many successes at the Oxford Locals and Conjoint Board Exams. (*Signed by*) W. G. Aston, Wm. Barbour, Margaret S. Dixon.

ROBERTSON, JOHN, 21, Borden Road, Glasgow, W. 3. Scots. B.Sc. (Glasgow University). University Assistant in Organic Chemistry since 1927. *J.C.S.*, 1924, **125**, 1526; 1929, 300. (*Signed by*) Charles Buchanan, T. S. Stevens, Andrew Kent.

ROGERS, JAMES HILTON, 83, Plymouth Road, Penarth, Glamorgan. British. Chemist and Druggist. Member of the Pharmaceutical Society. I would like to have access to the books in the Society's Library. (*Signed by*) G. W. H. Stokes, J. H. Smith, A. G. Foster.

RYDON, HENRY NORMAN, 3, Mentmore Close, Northwick Park, Harrow, Middlesex. British. A.R.C.S. (1st Class Hons.), at Royal College of Science, London, also qualified for B.Sc. (Special), London University. Research Student in Organic Chemistry at Royal College of Science. Previously two years student of chemistry at Royal College of Science. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

SALAMA, ABDUL-AZIZ AHMAD, 5, Tanfield Place, Virginia Road, Leeds. Egyptian. Diploma in Science and Education (H.T.C., Cairo). Student of Chemistry, Leeds University. (*Signed by*) Frederick Challenger, W. A. Wightman, H. M. Dawson.

SHEIKH, ABDUL BAKI MOHAMMED SOLIEMAN, 9, Fairfax Road, Bedford Park, W. 4. Sunni Musalman (British). Research Student. B.Sc., M.Sc. (Bombay). I want to receive the Journals of Chemical Society to be in touch with the developments of modern research chemistry. (*Signed by*) G. A. R. Kon, R. D. Desai, E. H. Farmer.

SMITH, MARGARET SARAH, 7, Albert Road, Brighton, Sussex. English. Research Student. B.Sc. (General), B.Sc. (Special Chemistry), London. Student at Brighton Technical College, 1926–30. Research student in organic chemistry at University College, London, 1930 to date. (*Signed by*) C. K. Ingold, O. L. Brady, J. N. E. Day.

STANLEY, DONALD BYARD, 377, Romford Road, Forest Gate, E. 7. British. Research Student, East London College. B.Sc. (Special), Chemistry, 1st Class Hons., at East London College. (*Signed by*) J. R. Partington, H. D. K. Drew, W. H. Patterson, D. C. Jones.

STONEHILL, HENRY ISRAEL, 39, Stepney Green Dwellings, Mile End, E. 1. British. Chemical Research Student. B.Sc. (Chem., 1st Class Hons.), London (examination passed but actual award of degree to be made next year). Studied chemistry for past two years at East London College, University of London. Passed B.Sc. (Chem.) examination, June 1931, with 1st Class Hons. (*Signed by*) J. R. Partington, H. D. K. Drew, H. H. Hatt.

STYLES, BERNARD JOSEPH, 86, St. Peter Street, Hackney Road, E. 2. English. Analyst. Member British Association Chemists. Papers, with F. J. Todd, Ph.C., "The Official Preparations of Cinchona Bark," B.P. Conf. 1927, and "Liquid Extract Belladonna," P.J. 9/7/27. I am anxious to receive the *Journal* and other publications and so keep in touch with the advance of chemistry. (*Signed by*) H. V. A. Briscoe, Leonard E. Hulls, Wm. H. Woodcock.

TODD, ALEXANDER ROBERTUS, 2, Douglas Gardens, Clarkston, Glasgow. British. Research Student. B.Sc. (Hons.), Glasgow. Three years' research experience in the Universities of Glasgow and Frankfurt a.M. *J.C.S.*, 1929, 1768, 2876. (*Signed by*) Charles Buchanan, T. S. Stevens, F. R. Storrie.

TODD, JOHN, 44, Shottskirk Road, Dykehead, Shotts, Lanarkshire. British. Carnegie Research Fellow. B.Sc., Ph.D. (Glasgow). Robert Donaldson Scholar, Carnegie Scholar, Carnegie Fellow, Associate of the Institute of Chemistry. Researches on Caoutchouc, Gutta-percha, and Balata. (*Signed by*) G. G. Henderson, Alfred Russell, T. S. Stevens.

TRESS, HENRY JOHN, 11, Linden Avenue, Wembley, Middlesex. English. Student. B.Sc. (1st Class Hons.), Internal, London (East London College). Research Student in Organic Chemistry at East London College under Dr. H. D. K. Drew. (*Signed by*) J. R. Partington, H. D. K. Drew, D. C. Jones.

WALLIS, NORTON JAMES HUGH, "Guys Cliffe," 36, Sydenham Road, Cotham, Bristol. British. Research Student. A.R.C.Sc., B.Sc. (Lond.), at Royal College of Science. To be kept informed of the most recent work

by means of the Society's publications, lectures, etc. (*Signed by*) G. A. R. Kon, E. H. Farmer, R. P. Linstead.

WARNER, HARRY, 15, Belmore Road, Hurstville, N.S.W. Australian. Food, Drug and Meat Inspector of the City of Sydney. Diploma in Biology, Sydney Technical College (the course included qualitative, quantitative, food analysis, and theoretical and practical inorganic, organic and industrial chemistry). Certificates from Sydney Technical College as Food and Drug Inspector, Factory Inspector, Health Inspector, Stock and Meat Inspector. Certificate from the London Royal Sanitary Institute as Food and Meat Inspector. Interested in Chemistry of Food and Drug Technology. (*Signed by*) Richard W. Challinor, A. D. Ollé, R. B. Scammell, R. E. Jeffery.

WATKINS, GERTRUDE MARGARET CLARE, 39, Upland Road, Sutton, Surrey. British. Research Student. B.Sc., London (Student of Bedford College for Women). Teacher of Chemistry. (*Signed by*) James F. Spencer, Corona G. Trew, E. E. Turner.

WATT, JOHN STEPHEN, University College, Oxford. British. Research Student. M.Sc., New Zealand. Have published the following papers in conjunction with Professor R. Robinson and Dr. W. F. Short, *J.C.S.*, 1930, 2293; 1931, 980. (*Signed by*) Robert Robinson, J. C. Smith, L. H. Briggs.

WHEELER, HAROLD, 41, Burghley Road, Hornsey, N. 8. British. London Representative of Manufacturing Chemists. Chemist and Druggist. Member of the Pharmaceutical Society, London. Have attended Science Lectures at the following: University College of Leic. and Rutlandshire (Tutor, Dr. Thomas); Leic. College of Technology (Tutors, Dr. Wood and Mr. Jones, M.Sc.); London School of Pharmacy (Tutor, Mr. Rankin, B.Sc., Ph.C.); Chelsea Polytechnic (Tutor, Mr. C. Morton, B.Sc., F.C.S.), etc. I wish (i) to receive the Society's publications, (ii) to attend the Society's lectures, and (iii) to have the use of the Society's Library. (*Signed by*) H. N. B. Richardson, F. H. Lowe, C. Morton.

WHELAN, PATRICK FRANCIS, Marin 5, Rio Tinto, Andalucia, Spain. British. Chemist and Hydro-metallurgist with The Rio Tinto Co., Ltd., 3, Lombard Street, London. B.Sc., 1927, and M.Sc., 1928, from National University of Ireland. Published work: Leonard and Whelan in *Science Proc. Roy. Dublin Soc.*, Vol. 19 (N.S.), No. 7. (*Signed by*) A. G. G. Leonard, Thomas J. Nolan, A. O'Farrelly, A. D. Mitchell.

WILLIAMSON, ALFRED EDWARD, Ivanhoe, Bilston Road, Aigburth, Liverpool. British. Managing Director. Wholesale Manufacturing Chemist. (*Signed by*) James Williamson, H. Humphreys Jones, J. E. Whipp.

WILSON, CHRISTOPHER LUMLEY, 90, Highgate Road, N.W. 5. British. Research Student. B.Sc. (Leeds). One year's research at Leeds University with F. J. Garrick, B.A., and one year's research at University College, London, with Professor C. K. Ingold, F.R.S. (*Signed by*) C. K. Ingold, R. J. W. Le Fèvre, O. L. Brady.

WOOD, NORMAN ALBERT, 69, Cambridge Road, Gt. Crosby, Liverpool. British. Chairman of Directors. Wholesale Manufacturing Chemist. (*Signed by*) James Williamson, H. Humphreys Jones, J. E. Whipp.

WRIGHT, HENRY GEORGE, 14, Lesbia Road, Lower Clapton, N.E. British. Laboratory Manager. Many years of experience in analytical work, including alkaloidal assays, water, milk, urine, and chemicals, and work on manufacturing formulas for oxycyanide of mercury, terebene, etc. Keen on receiving Society's publications. (*Signed by*) H. V. A. Briscoe, Leonard G. Hulls, Henry J. S. Sand.

WYATT, GORDON HILLIAR, "Perivale," Linden Avenue, Maidenhead. English. Student (at East London College). Passed B.Sc. Special (Lond.) examination in Chemistry (2nd Class). (*Signed by*) J. R. Partington, D. C. Jones, H. D. K. Drew, W. H. Patterson.

Forms of Recommendation for Fellowship recommended by the Council for presentation to ballot under Bye-Law I (2).

ATCHERLEY, JACK ROWLAND, 21, Turner Avenue, Glenhuntly, S.E. 9. Victoria, Australia. British. Manufacturing and Research Chemist, Chemical Laboratories, The Myer Emporium, Ltd., Victoria. Diploma I.C.S., London. Chemical methods immunising dried fruits against attack by insects. Commonwealth Patent 1928, and Council of Scientific and Industrial Research Reports. "Chemical Process for controlling Blow-Fly Pest in Sheep," *Pastoralists Review*. "Practical Methods of Sterilisation of Soil," *J. Agric. Vict*, "Non-Poisonous Sheep Dips and Agricultural Sprays." (*Signed by*) Alfred H. Jackson, Frederic Dunn.

BUSCH, HENRI, Frankfurt a.M., Weissfrauenstrasse 7–9. Deutscher. Chemiker. Dr.phil. Leiter des Literarischen Büros der Deutschen Goldund Silber-Scheideanstalt vormals Roessler, Frankfurt a.M. (*Signed by*) Karl Merck.

CALVET, FERNANDO, The University, Santiago de Compostela, Spain. Spanish. Professor. Ph.D. (Oxford); Dr. en Ciencias (Madrid). Formerly Ramsay Fellow and Rockefeller Fellow. Formerly Assistant at the University of Barcelona. *J.C.S.*, 1927, 685; 1928, 1088, 2913. (*Signed by*) F. D. Chattaway.

DENINA, Prof. Dr. ERNESTO, Laboratorio di Elettrochimica e di Chimica Fisica della R. Scuola di Ingegneria, Via Ospedale 32, Torino. Italiano. Professore di Elettrochimica e di Chimica Fisica al R. Politecnico e alla R. Università; direttore del Laboratorio di Elettrochimica del R. Politecnico di Torino. Dr. ingegnere chimico (Torino); diplomato in Elettrochimica ed Elettrometallurgia (Torino); libero docente in Elettrochimica (Roma). "Studi di Termochimica, ricerche sugli accumulatori a piombo, sui potenziali elettrolitici e sulle elettrolisi, sulle applicazioni delle lampade termojoniche," ecc. pubblicati sui principali periodici italiani. (*Signed by*) G. G. Henderson.

JALOUSTRE, LÉON-ANTONIN, 117, Rue St.-Lazare, Paris. French. Consulting Engineer, Expert. Licencié ès sciences, Agrégé de Physique, Diplomé d'études supérieures de Chimie de l'Université de Paris. Ancien Elève de l'Ecole Normale Supérieure (Sciences) et de l'Institut Pasteur de Paris. Ex-Chargé de Conférences à l'Institut de Chimie. Appliquée de l'Université de Paris. Auteur de nombreux travaux sur la chimie des elements radio-actifs et sur la radio-biologie. Publications diverses aux Comptes-Rendus de l'Académie des Sciences, de l'Académie de Médecine, de la Société de Biologie. Auteur d'une thèse sur l'arginase chez les vegetaux. (*Signed by*) T. S. Moore.

SHEPARD, MORRIS GOODWIN, 153, Hillside Avenue, Waterbury, Conn., U.S.A. American. Chemical Engineer. Chem. E., Columbia University, New York City. Seventeen years as Research Chemist with U.S. Rubber Co., including six as Chief Chemist of The Naugatuck Chemical Co., Naugatuck, Conn., a subsidiary of the U.S. Rubber Co. (*Signed by*) Percy J. Leaper, W. A. Gibbons.

TAGGART, WALTER THOMAS, John Harrison Laboratory of Chemistry, University of Pennsylvania, Pa., U.S.A. (Residence: 4418, Spruce Street, Phila., Pa.). U.S.A. Blanchard Professor of Chemistry. B.S., Ph.D. (*Signed by*) Louis A. Jordan, C. S. Gibson.

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FRASER, RONALD G. J. Molecular rays. Cambridge 1931. pp. xiv + 204. ill. 12*s*. 6*d*. net. (*Recd.* 3/11/31.)
From the Syndics of the Cambridge University Press.

INSTITUTION OF CHEMISTS (INDIA). Proceedings. Vol. I, etc. Calcutta 1929 +. (*Reference.*) From the Institution.

JACOB, A., and COYLE, V. The use of fertilisers in tropical and sub-tropical agriculture. London 1931. pp. 272. ill. 10*s*. 6*d*. net. (*Recd.* 19/10/31.)
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LEVENE, PHOEBUS AARON, and BASS, LAWRENCE W. Nucleic acids. (American Chemical Society Monograph Series.) New York 1931. pp. 337. ill. $4.50 net. (*Recd.* 15/10/31.)
From the Publishers: The Chemical Catalog Co. Inc.

MIALL, STEPHEN. A history of the British chemical industry. London 1931. pp. xvi + 273. ill. 10*s*. 6*d*. net. (*Recd.* 23/10/31.)
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SYDNEY, UNIVERSITY OF. Reprints. Series III. (Chemistry, organic and inorganic.) Vol. I, etc. Sydney 1924 +. (*Reference.*)
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II. *By Purchase.*

ALTPETER, JULIUS. Das Hexamethylentetramin und seine Verwendung. Halle (Saale) 1931. pp. vi + 178. ill. *M*. 16. (*Recd.* 14/11/31.)

ARKEL, A. E. VAN, and BOER, J. H. DE. Chemische Bindung als elektrostatische Erscheinung. Translated by LI KLEMM and WILHELM KLEMM. Leipzig 1931. pp. xx + 320. ill. *M*. 17. (*Recd.* 14/11/31.)

CHIH-CH'ANG, LI. The travels of an alchemist. Translated by ARTHUR WALEY. London 1931. pp. xii + 166. ill. 10*s*. 6*d*. net. (*Recd.* 20/10/31.)

DEBYE, PETER [Editor]. The dipole moment and chemical structure. Translated by WINIFRED M. DEANS. London 1931. pp. x + 134. ill. 10*s*. net. (*Recd.* 15/10/31.)

DURRANS, THOMAS HAROLD. Solvents. (Monographs on Applied Chemistry.) 2nd edition. London 1931. pp. xvi + 180. ill. 10*s*. 6*d*. net. (*Recd*. 19/10/31.)

FAJANS, KASIMIR. Radioelements and isotopes: chemical forces and optical properties of substances. New York 1931. pp. x + 125. ill. 15*s*. net. (*Recd*. 15/10/31.)

HOLMYARD, ERIC JOHN. Makers of chemistry. Oxford 1931. pp. xvi + 314. ill. 7*s*. 6*d*. net. (*Recd*. 19/10/31.)

HUME-ROTHERY, W. The metallic state. Electrical properties and theories. Oxford 1931. pp. xx + 372. ill. 25*s*. net. (*Recd*. 15/10/31.)

JENSEN, HAROLD RUPERT. The chemistry, flavouring and manufacture of chocolate, confectionery and cocoa. London 1931. pp. xvi + 406. ill. 27*s*. net. (*Recd*. 15/10/31.)

KLUYVER, A. J. The chemical activities of micro-organisms. London 1931. pp. 109. ill. 4*s*. 6*d*. net. (*Recd*. 20/10/30.)

KNOOP, FRANZ. Oxydationen im Tierkörper. Ein Bild von den Hauptwegen physiologischer Verbrennung. (Sammlung, New Series, Vol. I.) Stuttgart 1931. pp. 37.

KÖRBER, FRIEDRICH, and SCHIEBOLD, ERNST. [Editors.] Fortschritte der Röntgenforschung in Methode und Anwendung. Leipzig 1931. pp. viii + 326. ill. *M*. 38. (*Recd*. 14/11/31.)

KOLTHOFF, ISAAK MAURITS. The colorimetric and potentiometric determination of p_H. Outline of electrometric titrations. New York 1931. pp. xii + 167. ill. 11*s*. net. (*Recd*. 15/10/31.)

LOEB, LEONARD B. The nature of a gas. New York 1931. pp. x + 153. ill. 12*s*. 6*d*. net. (*Recd*. 15/10/31.)

NOUVEL, OTTO. Die Industrie der Phenol-Aldehyd-Harze. Halle (Saale) 1931. pp. viii + 128. ill. *M*. 11. (*Recd*. 14/11/31.)

PETERS, JOHN P., and VAN SLYKE, DONALD D. Quantitative clinical chemistry. Vol. I. Interpretations. [Baltimore] 1931. pp. xvi + 1264. ill. 54*s*. net. (*Recd*. 15/10/31.)

RAITT, WILLIAM. The digestion of grasses and bamboo for paper-making. London 1931. pp. xii + 116. ill. 21*s*. net. (*Recd*. 19/10/31.)

SLOTTA, KARL HEINRICH. Grundriss der modernen Arzneistoff-Synthese. Stuttgart 1931. pp. x + 202 + 25 tables. *M*. 20. (*Recd*. 14/11/31.)

ERRATUM.

Proceedings, 1931.

Page 70, *line* 12 *from bottom*, *for* 1931 *read* 1932.

TECHNOLOGY DEPT.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, December 3rd, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

Mr. M. S. Kazi was formally admitted a Fellow of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Dorothy Mary Crowfoot, B.A., The Old House, Geldeston, Beccles.
John Buchanan McNarey, Oakley House, Bath Road, Slough.
Thomas Hobson Mead, B.A., B.Sc., 64, Oakley Street, Chelsea, S.W. 3.
Ronald Barron Mooney, M.A., Ph.D., 14, Argyle Place, Edinburgh.
Mukundrai Maneklal Parekh, M.Sc., Organic Laboratory, University College, Gower Street, W.C. 1.
George Scott Patterson, Weensland, Mornington Rise, Matlock.
John Thomas Phillips, 52, Cloncurry Street, Fulham Palace Road, S.W. 6.
Norman Jeredick Price, B.A., A.I.C., c/o Messrs. Chance & Hunt, Ltd., Oldbury, Worcs.
Frank Stuart Spring, Ph.D., Hulme Hall, Victoria Park, Manchester.

Mr. H. H. Robins and Dr. W. H. Brindley were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared duly elected as Fellows :

Chhotalal Badrilal Almaula, B.A., B.Sc.
Sekharipuram Anantakrishnan Venkateswarier, B.A.
Jack Rowland Atcherley.
John Wilkinson Bee, M.A.
John Godolphin Bennett.
Edward James Boorman, A.R.C.S.
Arthur Cecil Bottomley, M.Sc., Ph.D.
Henri Busch, Dr.-phil.
Fernando Calvet, Ph.D., Dr. en Ciencas.
Blanche Rosemary Carpenter, B.Sc.
Eric George Hemphill Carter, B.Sc.
Wesley Cocker, M.Sc.
Ernest Harrison Coulson, B.Sc., A.R.C.S.
Malcolm Crawford, B.Sc.
James Allan Cunningham.
Prof. Dr. Ernesto Denina.
Dora Anne Duff, B.Sc.
Robert Albert Ernest Galley, B.Sc., A.R.C.S.
George Denholm Gillies, B.Sc.
Brinley Griffith, B.Sc.
Henry Isaac Hall, B.A.
Eric Gray Hancock, B.A., B.Sc.
Edward Francis Hartree, A.R.C.S.
Winifred Rosa Ashby Hollens, B.Sc.
Herbert Holmes.
Sidney Holt, M.Sc.Tech.
Edward David Hughes, B.Sc., Ph.D.
Léon Antonin Jaloustre.
Alfred Herbert Janes, B.Sc.

Richard Lewis Jones, B.Sc.
Frank Eric La Valette, M.Sc.
Digby Thomas Leyshon.
Edwin Marshall Meade, A.R.C.S.
Hermann Günther Gottschaldt Mohrhenn, B.Sc.
John Lewis Moilliet, B.A.
Ruth Mona Murray, B.Sc.
David Malcolm Murray-Rust, M.A., B.Sc.
Parameswar Velayudhan Nair, B.A., M.Sc.
Krishna Shrinivas Nargund, B.A., M.Sc.
Michael O'Donnell, L.A.H.D., L.P.S.I.
John Owen, B.Sc.
Samuel Richard Pethrick, B.Sc.
Jack Pollard.
George Maxwell Richardson, M.Sc., Ph.D.
Eliot Harry Roberts.
John Robertson, B.Sc.
James Hilton Rogers.
Henry Norman Rydon, B.Sc., A.R.C.S.
Abdul-Aziz Ahmad Salama.
Abdul Baki Mohammed Solieman Sheikh, M.Sc.
Morris Goodwin Shepard.
Margaret Sarah Smith, B.Sc.
Donald Byard Stanley, B.Sc.
Henry Israel Stonehill.
Bernard Joseph Styles.
Walter Thomas Taggart, B.S., Ph.D.
Alexander Robertus Todd, B.Sc.
John Todd, B.Sc., Ph.D.
Henry John Tress, B.Sc.
Norton James Hugh Wallis, B.Sc., A.R.C.S.
Harry Warner.
Gertrude Margaret Clare Watkins, B.Sc.
John Stephen Watt, M.Sc.
Harold Wheeler.
Patrick Francis Whelan, M.Sc.
Alfred Edward Williamson.
Christopher Lumley Wilson, B.Sc.
Norman Albert Wood.
Henry George Wright.
Gordon Hilliar Wyatt.

The following papers were read:

"The dissociation constants of organic acids. Part V. The mobility of the hydrogen ion at 18° and at 25°." By G. H. JEFFERY and A. I. VOGEL.

"Catalytic dehalogenation by tetrahydronaphthalenes in presence of copper." By (Miss) M. S. LESSLIE and E. E. TURNER.

"Orientation effects in the diphenyl series. Part X. The quantitative nitration of 4 : 4′-dichloro- and 4 : 4′-dibromo-diphenyl, and of 4-chloro-4′-bromodiphenyl." By (MISS) F. R. SHAW and E. E. TURNER.

"Magnetism and valency. Part I. Copper and silver compounds." By S. SUGDEN.

"Properties of conjugated compounds. Part XVIII. The catalytic hydrogenation of butadiene-α-carboxylic acids." By E. H. FARMER and R. A. E. GALLEY.

DISCUSSIONS.

In addition to the two Discussions already announced for December 17th, 1931, and May 19th, 1932, the Ordinary Scientific Meeting on Thursday, February 18th, 1932, will be devoted to a Discussion on "The Significance of Velocity Measurements in Relation to the

Benzene Substitution Problem." The Discussion will be opened by Mr. A. E. Bradfield.

ANNUAL REPORTS.

Fellows who have not ordered the Annual Reports for 1931 should make application as soon as possible. Application should be accompanied by a remittance for 5*s*. 6*d*.

Ordinary Scientific Meeting, Thursday, December 17th, 1931, at 8 p.m., Professor G. G. HENDERSON, D..Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on December 12th, 1931, of Mr. Beeby Thompson, who was elected a Fellow on February 5th, 1877.

The following announcements were made:

1. Professor W. E. Garner, Professor J. Kendall, and Professor T. M. Lowry would represent the Society on the Editorial Board of the *Journal of Physical Chemistry* for 1932.

2. The Perkin Memorial Volume, dealing with the life and work of the late Professor William Henry Perkin, Past-President of the Society, will be published at the end of next month, and issued free to Fellows with the publications for January. The contributors to this volume are: Mr. A. J. Greenaway, F.I.C., Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., and Professor R. Robinson, D.Sc., F.R.S. The volume will be sold at 3*s*. 6*d*., postage extra.

3. The Discussion number of the *Journal* containing the proceedings of this evening's meeting will also be published at the end of next month, and issued free to Fellows with the publications for January. The volume will be sold at 1*s*. 6*d*., postage extra.

4. At the meeting of Council held this afternoon it was decided that as from January 1st, 1932, and until further notice, papers should not be considered for publication in the *Journal* unless the author, or one of the authors, is a Fellow of the Society.

The following were formally admitted Fellows of the Society: H. Wheeler, S. V. Anantakrishnan, Eric G. Hancock, E. G. Carter, G. H. Wyatt, K. I. Ross, H. W. Thompson, M. S. Smith, H. G. Wright, B. J. Styles, E. D. Hughes, G. D. Greville, F. W. Kirkbride, K. S. Nargund, D. M. Murray-Rust, W. F. K. Wynne-Jones, B.

Topley, H. G. G. Mohrhenn, C. L. Wilson, H. I. Stonehill, E. F. Hartrey, J. E. Mills, James Bell, J. H. Wolfenden, and E. J. Bowen.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Aileen Mary Hayward, B.Sc., Ph.D., Brantwood, Lake Road West, Cardiff.
Arthur John Stevenson, B.A., Eaglehurst, Ditton Hill, Surbiton.
Aneurin Williams, M.Sc., Mayfield, Fairfield Road, Widnes.
Charles George Maurice de Worms, M.A., A.I.C., Milton Park, Egham, Surrey.

The following Form of Recommendation has been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Robert Meyer, La Société des Usines Chimiques, St.-Fons, Rhône, France.

A Discussion on "The Critical Increment of Homogeneous Reactions" was opened by Mr. C. N. Hinshelwood, and continued by Mr. E. J. Bowen, Professor A. J. Allmand, Professor E. K. Rideal, Dr. F. G. Soper, Dr. R. G. W. Norrish, Mr. C. R. Bailey, and Mr. H. W. Thompson. An account of the Discussion will be contained in the special Discussion number of the *Journal*.

The Council has made the following grants from the Research Fund :

	£	s.	d.
Physico-chemical studies of basic beryllium complexes. W. R. Angus. (Univ. Coll., Lond.)	5	0	0
Hantzsch's pyridine condensation. E. E. Ayling. (Univ. Coll., Swansea)	5	0	0
Heterogeneous equilibria in ternary systems. C. R. Bailey. (Univ. Coll., Lond.)	5	0	0
The constitution of taxine. B. K. Blount. (Oxford Univ.) ...	15	0	0
Lactonisation of $\alpha\beta$- and $\beta\gamma$-unsaturated acids. E. J. Boorman. (Imperial Coll.)	5	0	0
Halogenation of phenolic ethers, etc. A. E. Bradfield. (Univ. Coll., Bangor)	5	0	0
Addition of mercaptans to ethylenic hydrocarbons and certain derivatives. G. N. Burkhardt. (Manchester Univ.) ...	6	0	0
Cannabis Indica resin (Hashish). R. S. Cahn. (Univ. Coll., Bangor)	2	0	0
Constitution of barbaloin. R. S. Cahn. (Univ. Coll., Bangor)...	4	0	0
Lichen acids. F. W. Canter. (Lond. Sch. of Hygiene)... ...	5	0	0
Substitution in *p*-diphenylyl ketones. (Miss) B. R. Carpenter. (Bedford Coll.)	5	0	0
Relation between interfacial tension lowering and adsorption by porous adsorbents. E. G. Carter. (E. Lond. Coll.) ...	5	0	0
Application of the Guareschi reaction to quinones. R. Craven. (Robert Gordon's Coll., Aberdeen)	5	0	0

	£	s.	d.
Hydroxy-carbonyl compounds. F. H. S. Curd. (Lond. Sch. of Hygiene)	5	0	0
Addition reaction of cinnamylidenemalonic ester. (Miss) D. A. Duff. (Univ. Coll., Lond.)	7	0	0
Studies in the hindrance of organic reactions. G. M. Dyson. (Loughborough Coll.)	7	0	0
Physical properties of binary liquid mixtures. (Miss) I. K. Faith. (Bedford Coll.)	5	0	0
Selenates and other salts of praseodymium. J. N. Friend. (Birm. Tech. Coll.)	10	0	0
Hydrogenation of conjugated compounds. R. A. E. Galley. (Imperial Coll.)	5	0	0
Polysulphonyl methanes. D. T. Gibson. (Glasgow Univ.) ...	5	0	0
Structure of glutaconic esters and acids. B. S. Gidvani. (Imperial Coll.)	5	0	0
Chemical dynamics of the reactions between sodium *m*-xylenolate and alkyl iodides. P. J. Hardwick. (Chelsea Polytechnic)	5	0	0
Measurement of oxidation and reduction potentials. (Miss) A. M. Hayward. (Bedford Coll.)	5	0	0
Stereochemistry of some mixed β-tetrammines. F. S. H. Head. (E. Lond. Coll.)	7	10	0
Substitution reactions in polycyclic systems. D. H. Hey. (Manchester Univ.)	5	0	0
Dielectric constants of benzene solutions of some sulphur, selenium, and tellurium compounds, and of certain heterocyclic oxygen compounds. E. C. E. Hunter. (E. Lond. Coll.)	5	0	0
Cytisine and related alkaloids. H. R. Ing. (Univ. Coll., Lond.)	7	10	0
Some aromatic hydrazides. A. H. Janes. (E. Lond. Coll.) ...	5	0	0
Dipole moments of organic substances with special reference to organic derivatives of metals and metalloids. J. D. A. Johnson. (Guy's Hospital Medical School)	22	10	0
Formation of bridged cyclic compounds. R. L. Jones. (Imperial Coll.)	5	0	0
Investigation of organo-metallic compounds (*continued*). W. J. Jones. (Univ. Coll., Cardiff)	4	0	0
Amino-derivatives of quasi-aromatic system. M. S. Kazi. (Univ. Coll., Lond.)	5	0	0
Synthesis of physostigmine (eserine). F. E. King. (Oxford Univ.)	10	0	0
Interaction of amine salts with aldehydes. R. J. W. Le Fèvre. (Univ. Coll., Lond.)	5	0	0
Effect of structure on the equilibrium between $\alpha\beta$- and $\beta\gamma$-unsaturated esters. G. W. G. Maclennan. (Imperial Coll.) ...	5	0	0
Ring closure of *cyclo*pentane derivatives. E. M. Meade. (Imperial Coll.)	5	0	0
Studies in mutual liquid solubilities. H. J. Moss. (E. Lond. Coll.)	5	0	0
Diaryl ethers. (Miss) R. M. Murray. (Bedford Coll.)	5	0	0
Cyclic unsaturated acids and esters. B. L. Nandi. (Imperial Coll.)	4	0	0

	£	s.	d.
(*a*) Dehydration of β-hydroxy esters. (*b*) Catalytic influence in the three-carbon tautomerism. K. S. Nargund. (Imperial Coll.)	5	0	0
Primary photochemical reactions. R. G. W. Norrish. (Cambridge Univ.)	16	16	0
Synthesis of cyclic acids derived from Δ_3-carene. J. Owen. (Univ. Coll., Bangor)	5	0	0
Ring chain valency tautomerism. M. M. Parekh. (Univ. Coll., Lond.)	17	7	0
βγ-Substituted butane derivatives. S. R. Pethrick. (Univ. Coll., Southampton and Woolwich Polytechnic)	5	0	0
(*a*) Studies on glucosides. (*b*) Hydroxy-carbonyl compounds. A. Robertson. (Lond. Sch. of Hygiene)	12	10	0
Influence of poles in the simple three-carbon system. E. Rothstein. (Leeds Univ.)	8	0	0
(*a*) Influence of polar solvents on the rotatory power of *l*-benzoin and its methyl ether. (*b*) Benzoin condensation in the presence of optically active alkaloids. H. G. Rule. (Edinburgh Univ.)	10	0	0
Lactonisation and additive reactions of unsaturated acids with direct double bonds. H. N. Rydon. (Imperial Coll.) ...	4	10	0
Hydroxy-carbonyl compounds. Constituents of *Filix mas*, etc. W. F. Sandrock. (Lond. Sch. of Hygiene)	7	0	0
Hyponitrites (*continued*). C. C. Shah. (E. Lond. Coll.) ...	4	0	0
Orientation effects in the diphenyl series (*continued*). (Miss) F. R. Shaw. (Bedford Coll.)	5	0	0
Synthesis of amino- and alkoxy-derivatives of conjugated acids. A. B. M. S. Sheikh. (Imperial Coll.)	5	0	0
Investigations of resin acids. W. F. Short. (Auckland Univ. Coll.)	10	0	0
Effect of solvent on reaction velocity. F. G. Soper. (Univ. Coll., Bangor)	10	0	0
Examination of the stereochemistry of the bases derived from the tetrammines of platinous–platinum, in which various basic groups, *e.g.* pyridine, are combined with the platinum atom. D. B. Stanley. (E. Lond. Coll.)	7	10	0
The theory of strong electrolytes, with special reference to the question of complete ionisation. H. I. Stonehill. (E. Lond. Coll.)	5	0	0
Kinetics of certain gaseous oxidation processes. H. W. Thompson. (Oxford Univ.)	15	0	0
Physical properties of binary liquid mixtures. (Miss) M. E. Thompson. (Bedford Coll.)	5	0	0
Stereochemistry of various ammines of bivalent platinum. H. J. Tress. (E. Lond. Coll.)	7	10	0
Synthesis of 1 : 1′-dicarbazyl. (Miss) M. C. Nelmes and S. H. Tucker. (Glasgow Univ.)	5	0	0
(*a*) Thermal decomposition of substituted dibasic acids. (*b*) Isolation of strainless forms of *cyclo*hexane and substituted *cyclo*hexane derivatives. A. I. Vogel. (Univ. Coll., Southampton and Woolwich Polytechnic)	8	0	0

	£	s.	d.
Physical properties of liquid binary mixtures. (Miss) G. M. C. Watkins. (Bedford Coll.)	5	0	0
The glutaconic problem. E. M. Watson. (Imperial Coll.) ...	5	0	0
Asymmetry and tautomerism. C. L. Wilson. (Univ. Coll., (Lond.)	8	0	0
(*a*) Viscosity of very dilute solutions of electrolytes. (*b*) Viscosity of liquids suspected of occurring in two modifications. J. H. Wolfenden. (Oxford Univ.)	10	0	0
Action of dimethylamine on potassium chloroplatinite. G. H. Wyatt. (E. Lond. Coll.)	7	10	0
	£450	3	0

PERKIN MEMORIAL VOLUME.

The Perkin Memorial Volume dealing with the life and work of the late Professor William Henry Perkin, Sc.D., LL.D., F.R.S., Past-President of the Society, will be published at the end of January, and will be issued free to Fellows with the publications for January. The contributors to this volume are: Mr. A. J. Greenaway, F.I.C., Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., and Professor R. Robinson, D.Sc., F.R.S. The volume will be sold at 3*s.* 6*d.*, postage extra.

DISCUSSION NUMBER.

The special number of the *Journal*, containing the report of the Discussion on "The Critical Increment of Homogeneous Reactions," held on December 17th, will be published at the end of January next and will be issued free to Fellows with the publications for that month. The contributors to the Discussion are: Mr. C. N. Hinshelwood, M.A., F.R.S., Mr. E. J. Bowen, M.A., Professor A. J. Allmand, M.C., D.Sc., F.R.S., Professor E. K. Rideal, M.A., F.R.S., Dr. F. G. Soper, Dr. R. G. W. Norrish, B.A., Mr. C. R. Bailey, B.A., M.Sc., Mr. H. W. Thompson, and Dr. T. Iredale.

ANNUAL REPORTS.

Fellows are reminded that applications for the Annual Reports for 1931, Volume XXVIII, at 5*s.* 6*d.* per copy should be made at once to Mr. S. E. Carr. Application must be accompanied by a remittance for 5*s.* 6*d.*

DISCUSSION.

The Ordinary Scientific Meeting on Thursday, February 18th, 1932, will be devoted to a Discussion on "The Significance of Velocity Measurements in Relation to the Benzene Substitution Problem." The Discussion will be opened by Mr. A. E. Bradfield.

List of papers, or abstracts thereof, received between November 19th, 1931, and December 17th, 1931. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the *Journal*.)

"The replacement of bromine in bromophenols by the nitro-group. Part II. 3-Fluoro-2 : 4 : 6-tribromophenol. Some cases of group migration." By H. H. HODGSON and J. NIXON.

"The action of alkylmagnesium on triphenylphosphine dichloride." By B. K. BLOUNT.

"An experiment to illustrate diffusion of gases." By J. E. MACKENZIE and H. W. MELVILLE.

"Studies of valency. Part XV. The dielectric constants of phosphorus trichloride and pentachloride." By T. M. LOWRY and J. HOFTON.

"Note on the chemical behaviour of ekatantalum." By O. GRATIAS and C. H. COLLIE.

"An *X*-ray examination of β-methylxyloside." By E. G. COX.

"Symmetrical triad prototropic systems. Part VIII. The analogy between symmetrical triad systems and aromatic side-chain reactivity, and the effect of *m*-substitution on mobility and equilibrium in the *αγ*-diphenylmethyleneazomethine system." By C. W. SHOPPEE.

"The vapour pressure of water over aqueous solutions of the chlorides of the alkaline-earth metals. Part I. Experimental, with critical discussion of vapour-pressure data." By J. R. I. HEPBURN.

"The sulphonation of *o*-anisidine and acet-*o*-anisidine." By R. CHILD.

"Complex formation between nitrobenzenes." By D. L. HAMMICK, L. W. ANDREW, and J. HAMPSON.

"A paramagnetic organic compound." By J. KENYON and S. SUGDEN.

"Isomeric 3-bromo-derivatives of dehydro-2-naphthol 1-sulphide." By J. A. C. MCCLELLAND and S. SMILES.

"An *X*-ray examination of the oxides of lead." By J. A. DARBYSHIRE.

"The action of light on mixtures of ozone and chlorine. Part II. Results with high ozone concentrations. Discussion." By A. J. ALLMAND and J. W. T. SPINKS.

"The vapour pressure of water over aqueous solutions of the chlorides of the alkaline-earth metals. Part II. Deviations from Raoult's law, as indicated by the molecular lowering of vapour pressure and van 't Hoff coefficients; with theoretical discussion." By J. R. I. HEPBURN.

"Benzoic esters and electronic affinities of radicals. Part III." By A. ZAKI.

"Carbonyl selenide. Part I. Preparation and physical properties." By T. G. PEARSON and P. L. ROBINSON.

"A study of liquid–liquid junctions with a view to eliminate liquid–liquid junction potential difference." By J. V. LAKHANI.

"Freezing points of the system hydrogen chloride–sulphur monochloride." By H. TERREY and H. SPONG.

"New derivatives of *p*-arsanilic acid. Part III. *p*-Arsonoglutaranilic acid and related compounds." By G. T. MORGAN and E. WALTON.

"Experiments on the synthesis of physostigmine (eserine). Part I. Some indolenine derivatives." By R. ROBINSON and H. SUGINOME.

"Experiments on the synthesis of physostigmine (eserine). Part II. Synthesis of a base which is believed to be *dl*-noreseretholе." By R. ROBINSON and H. SUGINOME.

"Experiments on the synthesis of physostigmine (eserine). Part III. Synthesis of *des*-ethoxydehydroeseretholemethine." By H. S. BOYD-BARRETT and R. ROBINSON.

"Experiments on the synthesis of physostigmine (eserine). Part IV. The Plancher rearrangement of indole derivatives." By H. S. BOYD-BARRETT.

"Experiments on the synthesis of physostigmine (eserine). Part V. A synthesis of dehydroesermetholemethine." By F. E. KING and R. ROBINSON.

"Resolution of *r*-phenylmethoxyacetic acid into its optically active components." By D. J. C. PIRIE and (MISS) I. A. SMITH.

"A qualitative study of the action between mercury and methyl iodide." By J. L. MAYNARD.

"The component glycerides of partially hydrogenated fats. Part I. The alterations in glyceride structure produced during progressive hydrogenation of olive and cottonseed oils." By T. P. HILDITCH and E. C. JONES.

"The slow combustion of acetylene." By R. SPENCE.

"The kinetics of two bimolecular reactions in solution and in the vapour phase." By E. A. Moelwyn-Hughes and C. N. Hinshelwood.

"Nitro-derivatives of dehydrodivanillin." By J. M. Gulland and G. U. Hopton.

"Selective adsorption by activated charcoal from solutions containing two organic acids." By C. Ockrent.

"The nitrosation of phenols. Part XIII. *o*-Chlorophenol." By H. H. Hodgson.

"The nitrosation of phenols. Part XIV. Resorcinol mono*iso*propyl ether." By H. H. Hodgson and H. Clay.

"The kinetics of the esterification of acetic anhydride in ethyl alcohol solution." By E. A. Moelwyn-Hughes and A. C. Rolfe.

"The picrolonates of the alkaline-earth metals." By P. L. Robinson and W. E. Smith.

"The preparation of dibromofluorescein." By M. A. Phillips.

"Catalysis and photo-conductors." By A. F. H. Ward and F. H. Constable.

"The chemistry of the three-carbon system. Part XXVII. Nitriles of butenoic and hexenoic acids. A note on the analysis of unsaturated nitriles by halogen addition." By R. A. Letch and R. P. Linstead.

"Synthetical experiments in the chromone group. Part VII. A synthesis of 7 : 8 : 4′-trihydroxyflavone, 7 : 8 : 3′ : 4′-tetrahydroxyflavone, 7 : 8 : 3′ : 4′ : 5′-, 5 : 7 : 3′ : 4′ : 5′-, and 3 : 7 : 3′ : 4′ : 5′-pentahydroxyflavone." By I. C. Badhwar, K. S. Kang, and K. Venkataraman.

"The preparation of pure ethane, methane, and hydrogen and the analysis of their mixtures." By W. E. MacGillivray.

"The rotation dispersion and circular dichroism of bornylene nitrosite." By S. Mitchell and S. B. Cormack.

"The planar configuration of diamagnetic nickel complexes. Part I. Isomeric nickel derivatives of methylbenzylglyoxime." By S. Sugden.

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ADDITIONS TO THE LIBRARY.

I. *Donations.*

ARMSTRONG, EDWARD FRANKLAND and ARMSTRONG, K. F. The glycosides. London 1931. pp. viii + 123. 12*s.* 6*d.* net. (*Recd.* 19/11/31.)

From the Publishers: Messrs. Longmans, Green & Co.

BRITTON, HUBERT THOMAS STANLEY. Chemistry, life and civilisation. A popular account of modern advances in chemistry. London 1931. pp. viii + 248. ill. 10*s.* 6*d.* net. (*Recd.* 3/12/31.)

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From Professor C. S. Gibson, O.B.E., F.R.S.

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SOCIÉTÉ DE LA MAILLERAYE. La Mailleraye. Bulletin technique. No. 2, etc. Paris 1924 +. (*Reference.*)
From Dr. R. E. W. Maddison.

II. *By Purchase.*

DEBYE, PETER. [Editor.] Molekülstruktur. Leipziger Vorträge 1931. Leipzig 1931. pp. viii + 197. ill. *M*. 10. (*Recd.* 23/11/31.)

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WALDEN, PAUL. Mass, Zahl und Gewicht in der Chemie der Vergangenheit. Ein Kapitel aus der Vorgeschichte des sogenannten quantitativen Zeitalters der Chemie. (Sammlung, New Series. Vol. I.) Stuttgart 1931. pp. 106.

III. *Pamphlets.*

ANTHONY, D. J., JACKSON, FREDERICK WILLIAM, and JOYCE, THOMAS GOODE. "Black Gut." (From the *Vet. Record*, 1931, **11**.)

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 50. The poisonous action of ingested saponins. By ALFRED JAMES EWART. Melbourne 1931. pp. 28. ill.

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CHATTERJEE, N. N. On the necessity of standardising a method for the proximate analysis of coal in India. (From the *Q.J. Geol. Min. Met. Soc. India*, 1931, **3**.)

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—— Notes on contracts of service. By GEORGE STANLEY WITHERS MARLOW. London 1925. pp. 25.

—— The chemist and commerce. By LESLIE HERBERT LAMPITT. London 1930. pp. 16.

—— Lessons learnt from industrial gases and fumes. By SIR THOMAS LEGGE. London 1930. pp. 23.

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PATTERSON, THOMAS STEWART. John Mayow in contemporary setting. A contribution to the history of respiration and combustion. (From *Isis*, 1931, **15**.) ill.

ROSENHOLTZ, JOSEPH L., and SMITH, DUDLEY T. Tables and charts of specific gravity and hardness for use in the determination of minerals. (*Rensselaer Poly. Inst. Bull., Eng. Sci. Ser.* No. 34.) Troy 1931. pp. 83.

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SYLVESTER, HAROLD MACTAVISH. An investigation of pressures and vacua produced on structures by wind. (*Rensselaer Poly. Inst., Eng. Sci. Ser.*, No. 31.) Troy 1931. pp. 53. ill.

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—— —— Circular No. 183. Factors for converting percentages of nitrogen in foods and feeds into percentages of proteins. By D. BREESE JONES. Washington 1931. pp. 21.

—— —— Circular No. 185. New fertilizer materials. By ALBERT R. MERZ. Washington 1931. pp. 14. ill.

—— —— Food and Drug Administration. Service and Regulatory Announcements. Food and Drug No. 4. Amendment of July 8, 1930, to Federal Food and Drugs Act and requirements thereunder. Washington 1931. pp. 6.

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WERTHER, MATTHEUS HENDRIKUS. Nitratie van ortho- en para-xenylamine-derivaten. Leiden 1931. pp. xvi + 118.

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WOOLEY, JERALD G., with the technical assistance of HILARY ROSS. Phosphorus, total calcium, and diffusible calcium content of the blood sera of lepers and their relation to bone changes. (From the *U.S. Public Health Reports*, 1931, **46**.)

YAMAFUJI, KAZUO. Changes of the chemical composition of proteins on heating. I. (From the *Bul. Fak. Terkultura, Kyushu Imp. Univ.*, 1930, **4**.)

—— Über die chemischen Bestandteile des Tabaks. I. (From the *Bull. Agric. Chem. Soc. Japan*, 1931, **7**.)

TECHNOLOGY DEPT.

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FEB 12 1932
DETROIT

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 21st, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Thomas C. Allchin	Dec. 7th, 1922.	Sept. 19th, 1931.
Thomas W. Coslett	Dec. 1st, 1910.	Dec. 12th, 1931.
Holland Crompton	May 20th, 1886.	Dec. 22nd, 1931.
James C. Fraser	May 5th, 1892.	Feb. 26th, 1931.
Frederick L. Grutzmacher	Dec. 5th, 1912.	June 29th, 1930.
George Lunan	Feb. 21st, 1907.	Nov. 20th, 1931.
Alfred H. M. Purse	May 7th, 1931.	Nov. 21st, 1931.
Reginald E. S. Richardson	May 5th, 1892.	April 8th, 1931.

The PRESIDENT announced that :

1. Under the Will of the late Professor R. Meldola a legacy of £500 was bequeathed to the Chemical Society payable on the death of Mrs. Meldola and that Mrs. Meldola died on January 2nd, 1932.

2. The names of the members of Council who retire at the next Annual General Meeting, in accordance with Bye-Law VI, and who are ineligible for the same office until after the lapse of one year, are as follows :

Vice-President who has filled the office of President : Prof. W. P. Wynne.

Vice-President who has not filled the office of President : Dr. T. A. Henry.

Ordinary Members of Council :

(*a*) Town Members : None.

(*b*) Country Members : Prof. G. M. Bennett, Dr. J. A. Cranston, Prof. W. E. Garner, Prof. I. Masson.

In June 1931 the Council appointed Mr. Emile Mond as Treasurer until the next Annual General Meeting to fill the vacancy caused by

the retirement of Prof. T. Slater Price from this office. It also appointed, for the same period, Prof. T. Slater Price to fill the vacancy amongst the Vice-Presidents caused by Mr. Emile Mond's acceptance of the office of Treasurer. These two vacancies, therefore, also fall due to be filled.

Further, the Council has accepted the resignations as Ordinary Members of Council (Town Members) of Dr. J. Kenyon, Dr. G. A. R. Kon, and Mr. J. Davidson Pratt (elected at the Annual General Meeting in March, 1931), who generously placed their resignations at the disposal of the Council in order that the rotation of Ordinary Members of Council contemplated under Bye-Law XI may be carried out. Last year, there were six vacancies in this category; in the ordinary course of events, this year there would have been no vacancies.

The following vacant places in the Council, therefore, fall due to be filled at the Annual General Meeting of the Society, which is to be held at the University, Glasgow, on Friday, March 18th, 1932 :

Vice-Presidents who have filled the office of President : Two vacancies.

Vice-Presidents who have not filled the office of President : Two vacancies.

Treasurer : One vacancy.

Ordinary Members of Council :

(*a*) Town Members (*i.e.* those living within a radius of 50 miles from London), three vacancies.

(*b*) Country Members (*i.e.* those living beyond a radius of 50 miles from London), four vacancies.

The Council has nominated Mr. Emile Mond to the office of Treasurer.

The following were formally admitted Fellows of the Chemical Society : Miss Ruth M. Murray, Miss B. R. Carpenter, Miss W. R. A. Hollens, Messrs. N. J. H. Wallis, E. J. Boorman, R. L. Jones, E. H. Coulson, E. M. Watson, H. N. Rydon, J. B. Whitworth, G. M. Richardson, T. H. Quibell, E. M. Meade, D. B. Stanley, H. Jermain M. Creighton, D. H. Peacock.

Forms of Recommendation were read for the first time in favour of :

Choji Araki, Prof., Shimogamo, Izumikawacho I, Kyoto, Japan.
Cecil Edwin Henry Bawn, B.Sc., Hulme Hall, Victoria Park, Manchester.
George Allan Beattie, 23, Newbolt Avenue, Cheam, Surrey.
Bernard William Bradford, Ph.D., A.R.C.S., 72, West Side, Clapham Common, S.W. 4.

Donald Chisholm, Ph.D., 209, Auldhouse Road, Newlands, Glasgow.
Louis Nathan Cohen, B.A., B.Sc., 15, Breda Street Gardens, Cape Town.
Albert Stanley Gomm, Ph.D., The Biochemical Laboratory, University, Bristol.
Francis William Gray, M.A., D.Sc., 31, Hamilton Place, Aberdeen.
Christina Cruickshank Miller, Ph.D., D.Sc., c/o Mrs. Dickson, 245, Dalkeith Road, Edinburgh.
William Lockerbie Thomson, B.Sc., A.I.C., Garden Croft, Crediton, Devon.
Thorbergur Thorvaldson, Prof., A.M., Ph.D., University of Saskatchewan, Saskatoon, Saskatchewan, Canada.
Alfred René John Paul Ubbelohde, B.A., B.Sc., Christ Church, Oxford.
Adolf Windaus, Prof., Ph.D., Hospitalstrasse 8/9, Göttingen, Germany.

The following Forms of Recommendations have been authorised by the Council for presentation to ballot under Bye-Law I (par. 2):

Ernst Bryk, D.Phil., Hochmu'hl 4, Frankfurt-a-Main.
Georg Kraenzlein, D.Phil., Ludwigshafenerstrasse 14, Frankfurt-a-Main.
Marie Marguerite Messonnier, L'Université de Lyon, 18, Quai Claude Bernard, Lyon.
Julius Meyer, Prof., D.Phil., Chemisches Institut der Universitat, Burgstrasse 8, Breslau 1.
K. Vishvanathan, B.Sc., 315, Rastas Peth, Poona 2, India.
Karl Zahn, D.Phil., Liederbacherstrasse 5, Frankfurt-a-Main.

The following papers were read:

"The planar configuration of dimagnetic nickel complexes. Part I. Isomeric nickel derivatives of methylbenzylglyoxime." By S. SUGDEN.

"The analogy between the benzidine change and dissociation of oxides of nitrogen. A new reagent for the recovery of secondary bases from nitrosoamines and for purifying amines." By E. C. S. JONES and J. KENNER.

"Chemical evidence of chelation in the sodium salts of *o*-hydroxybenzaldehydes." By O. L. BRADY and W. H. BODGER.

"Experiments on the synthesis of polyhydroxylic compounds." By W. CHARLTON and J. KENNER.

DISCUSSION.

The Ordinary Scientific Meeting on Thursday, February 18th, 1932, will be devoted to a Discussion on "The Significance of Velocity Measurements in Relation to the Benzene Substitution Problem."

The Discussion will be opened by Dr. A. E. Bradfield, whose contribution will be based upon the work described in the following papers:

"The Chlorination of Anilides. The Directing Influence of the Acylamido-group" (J., 1927, 986).

"The Chlorination of Anilides. Part IV. The Significance of Velocity Measurements in Relation to the Problem of Benzene Substitution" (J., 1928, 1106).

" The Chlorination of Anilides. Part V. The Significance of Velocity Measurements in Relation to the Problem of Benzene Substitution " (J., 1928, 3073).

" The Halogenation of Phenolic Ethers and Anilides. Part I. The Bromination of Ethers in 50% Acetic Acid " (J., 1929, 2810).

" The Halogenation of Phenolic Ethers and Anilides. Part II. Additional Velocity Measurements in 99% Acetic Acid " (J., 1931, 2903).

" The Halogenation of Phenolic Ethers and Anilides. Part III. The ' Phase and Steric ' Factor " (J., 1931, 2907).

THIRD PEDLER LECTURE.

The third Pedler Lecture, entitled, " The Life and Work of Otto Wallach," will be delivered by Professor L. Ruzicka, of Zürich, on Thursday, March 10th, 1932, at 5.30 p.m. The lecture will be held in the Meeting Hall of the Institution of Mechanical Engineers (Storey's Gate, Westminster, S.W.1), by courtesy of the Council of that Institution. Tickets of admission will not be required.

THE 91ST ANNUAL GENERAL MEETING, AND THE ANNIVERSARY DINNER, GLASGOW, MARCH 18TH, 1932.

The next Annual General Meeting and Anniversary Dinner of the Society will be held in Glasgow on Friday, March 18th, 1932.

This is the first official visit of the Society to Scotland. The Council hopes that the occasion will be marked by a large attendance and that, in particular, Chemists and those associated with Chemistry residing in Scotland and the North of England will make a special effort to be present. To ensure that all branches of Chemistry and of Chemical Industry shall be represented at the meetings, the Local Sections of kindred Societies and Institutions and a number of Industrial Organisations have been invited and have agreed to co-operate. The arrangements are being undertaken by a General Committee, of which Dr. W. M. Cumming, Royal Technical College, 204, George Street, Glasgow, is the Honorary Secretary.

Annual General Meeting.

The Annual General Meeting will be held in the Fore Hall of the University of Glasgow, on Friday, March 18th. The business portion of the meeting (open to Fellows only) will commence at 4 p.m., and will be followed at 4.30 p.m. by the Presidential Address,

entitled "The Publication of Chemical Literature," to be delivered by Professor G. G. Henderson, M.A., D.Sc., F.R.S.

Tea will be served at the Glasgow University Union (University Avenue) at 3.30 p.m.

ANNIVERSARY DINNER.

The Anniversary Dinner will take place the same evening at the Grosvenor Restaurant, Gordon Street (close to the Central Station), at 7 for 7.15 p.m.

The price of the tickets (for lady or gentleman) is 12*s.* 6*d.* each, including gratuities.

It will facilitate arrangements if application for tickets be made at an early date; in any event before *Friday, March 11th.* Application should be made direct to Mr. S. E. Carr, The Chemical Society, Burlington House, Piccadilly, London, W. 1.

Separate tables will be provided as far as possible for members and their friends who desire to sit together.

CIVIC RECEPTION BY THE LORD PROVOST AND THE CORPORATION OF THE CITY OF GLASGOW, THURSDAY, MARCH 17TH, 1932.

The Lord Provost and the Corporation of the City of Glasgow will honour the Society by holding a Civic Reception in the City Chambers, Glasgow, on Thursday, March 17th, at 8.15 p.m. Admission will be by invitation only, and those desiring to attend the Reception should apply to Dr. W. M. Cumming not later than *Friday, March 11th.*

VISITS TO NOBEL'S EXPLOSIVES WORKS, ARDEER, AND TO PROVAN CHEMICAL WORKS, PROVANMILL, GLASGOW, ON SATURDAY, MARCH 19TH, 1932.

Through the kindness of Sir Harry McGowan, K.B.E. (President and Chairman of Imperial Chemical Industries, Limited), an invitation has been received for Fellows to visit Nobel's Explosives Factory at Ardeer on Saturday, March 19th. The journey to Ardeer will be by motor-coach, which will leave Glasgow at 9.15 a.m. and arrive back at 5.45 p.m. This invitation is not extended to ladies.

For those who wish to return home earlier in the afternoon of Saturday, a forenoon visit to the Provan Chemical Works, Provanmill, Glasgow, has been arranged by kind invitation of the By-Products Committee, through Mr. James MacLeod, F.I.C., Manager of Glasgow Corporation Chemical Works. The party will travel by motor bus, leaving George Square at 9.45 a.m. and returning at 12.30 p.m. An alternative programme will be arranged for ladies

who may not desire to make this visit and further particulars of this will be announced to those attending the meetings.

The number to whom these invitations are extended is limited, and prior consideration will be given to applications received from Fellows of the Society, and in particular, from Fellows not residing in, or near, Glasgow. Fellows desiring to take part in either of these excursions should apply to Dr. W. M. Cumming *before Friday, March 11th.*

RAILWAY FACILITIES.

The Railway Companies have granted facilities by which those attending the meetings in Glasgow will be able to travel from all parts of the country to Glasgow at the reduced rate of an ordinary single fare and one-third for the double journey. No minimum distance is fixed, and the facilities apply to all the Railway Companies in Great Britain except the Metropolitan, Metropolitan District and London Electric Railways. Tickets will be available from March 17th to 21st (inclusive). Those desiring to take advantage of this privilege should apply before March 11th to *Mr. S. E. Carr, Chemical Society, Burlington House, Piccadilly, London, W.* 1, for a signed voucher, which must be surrendered at the Booking Office when the ticket is purchased.

Special attention is drawn to the fact that these facilities are granted on the understanding *that not less than* 100 *persons* avail themselves thereof. Unless at least this number of vouchers are issued, the privilege will be withdrawn.

HOTELS.

Accommodation can be secured at the following hotels in Glasgow, all of which are within five minutes' walk of the Grosvenor Restaurant:

Central Hotel, Gordon Street (adjoining L.M.S. Station),
Cranston's Waverley Hotel, 172, Sauchiehall Street,
George Hotel, 235, Buchanan Street,
Grand Hotel, Charing Cross,
Kenilworth Hotel, 5, Queen Street,
North British Station Hotel, George Square (adjoining L.N.E.R. Station),
St. Enoch Hotel, St. Enoch Square (adjoining L.M.S. Station).

Early application is advisable, and particulars regarding the tariff of charges can be obtained from the Assistant Secretary.

List of papers, or abstracts thereof, received between December 17th, 1931, and January 21st, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The reduction of nitro-compounds by aldehydes in ethyl alcoholic potassium hydroxide solution." By E. S. BACON and D. H. RICHARDSON.

"The oxidation of pentane and other hydrocarbons. Part I." By L. M. PIDGEON and A. C. G. EGERTON.

"The oxidation of pentane and other hydrocarbons. Part II." By L. M. PIDGEON and A. C. G. EGERTON.

"The reduction of *l*-*n*-butylvinylcarbinol to *n*-butylethylcarbinol. A correction." By R. I. JOHNSON and J. KENYON.

"Some physical properties of carbonyl sulphide." By T. G. PEARSON, P. L. ROBINSON, and J. TROTTER.

"Polycyclic aromatic hydrocarbons. Part X. The synthesis of methyl and *iso*propyl homologues of 1 : 2-benzanthracene." By J. W. COOK.

"Bromine hydrate." By I. W. H. HARRIS.

"The vapour pressure of water over aqueous solutions of the chlorides of the alkaline-earth metals. Part III. Correlation with other physical properties of the solutions." By J. R. I. HEPBURN.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part IX. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 5-nitro-2-aminotoluene." By F. M. ROWE and F. J. SIDDLE.

"The oxidation of methane and the function of surfaces in gaseous reactions." H. W. THOMPSON and C. F. KEARTON.

"Some reactions of tungsten hexachloride." By A. J. COOPER and W. WARDLAW.

"Aliphatic sulphonyl fluorides." By W. DAVIES and J. H. DICK.

"Strychnine and brucine. Part XV. *neo*Strychnidine and its derivatives." By O. ACHMATOWICZ, (the late) W. H. PERKIN, jun., and R. ROBINSON.

"The velocity and mechanism of racemisation. Part I. Rochelle salt." By A. N. CAMPBELL and A. J. R. CAMPBELL.

"*p*-Xylylarsonic acid." By A. COHEN and H. KING.

"Studies on hydrogen cyanide. Part IV. Gattermann's hydrogen cyanide aldehyde synthesis." By L. E. HINKEL, E. E. AYLING, and W. H. MORGAN.

"Derivatives of diketopyrazoline." By F. D. CHATTAWAY and A. ADAIR.

"A contribution to Laplace's theory of capillarity. Influence of phase extent. Measurements of interfacial tension for aqueous potassium chloride against benzene, aniline, and octane." By W. HUGHES.

"The two-component salt mixtures of lead nitrate with sodium and potassium nitrates." By H. M. GLASS, K. LAYBOURN, and W. M. MADGIN.

"The structure of the glutaconic acids and esters. Part III. α-Carbethoxyglutaconic esters." By B. S. GIDVANI, G. A. R. KON, and C. R. WRIGHT.

"Intermetallic compounds formed in mercury. Part III. The Zn–Fe system and part of the Sn–Fe system." By A. S. RUSSELL.

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"The oxidation of β-3 : 4-dihydroxyphenylethylmethylamine with silver oxide. The isolation of 5 : 6-dihydroxy-1-methylindole

and a synthesis of 5 : 6-dimethoxy-1-methylindole." By H. BURTON.

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"Strychnine and brucine. Part XVIII. Final stages of the degradation of dinitrostrychol and an account of some nitrohydroxyquinoline derivatives." By K. N. MENON and R. ROBINSON.

"A new alkaloid from *Holarrhena antidysenterica* seeds." By R. D. HAWORTH.

ERRATUM.

Proceedings, 1931.

Page 106, line 16 from top, *for* W. E. Smith *read* W. E. Scott.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 18th, 1932.

ARAKI, CHOJI, Shimogamo, Izumikawacho I, Kyoto, Japan. Japanese. Professor of Kyoto Koto-Kogeigakko; Director of Chemistry, Rigakushi, Rigakuhakushi. Graduated from College of Science, Kyoto Imperial University, in 1925. Pre-Assistant Professor of Chemistry, College of Science, Kyoto Imperial University. (*Signed by*) R. Nodzu, S. Koizumi, S. Araki.

BAWN, CECIL EDWIN HENRY, Hulme Hall, Victoria Park, Manchester. British. Assistant Lecturer. B.Sc., Bristol. Student, University of Bristol. 1926–1931. B.Sc., 1st Class Hons. Chemistry, 1929. Research, 1929–1931. Publications: "Adsorption of Gases and Vapours on Plane Surfaces," *J. Amer. Chem. Soc.*, 1932, **53** (in press and appearing Jan.). *J.C.S.*, "The Catalytic Action of Hydrogen on Carbon Monoxide Flame" (Bawn and Garner, in press). (*Signed by*) Arthur Lapworth, Fred Fairbrother, Colin Campbell.

BEATTIE, GEORGE ALLAN, "Brae Moray," 23, Newbolt Avenue, Cheam, Surrey. British. Pharmacist (Manager, Schering, Ltd., London). Chemist and Druggist (Pharmaceutical Society of Great Britain). Member of Pharmaceutical Society. Studied chemistry under Dr. Wm. Maitland at Robert Gordon's Colleges, Aberdeen (previously at Rutherford College, Newcastle-on-Tyne, and S.W. Polytechnic, London). War service with Chemical Warfare Section of Royal Engineers, including experimental work on poison gas and "liquid fire." (*Signed by*) J. J. Blackie, W. A. Beattie, A. W. Edwards.

BRADFORD, BERNARD WILLIAM, 72, West Side, Clapham Common, S.W. 4. British. Research Chemist. A.R.C.S.; B.Sc. (London); D.I.C.; Ph.D. (London). Investigation (latterly as Beit Research Fellow, Imperial College) of surface properties of metals and cognate subjects (Ref. Ph.D. Thesis, University of London, 1931). "On the Dielectric Strengths of Some Explosive Mixtures containing Carbonic Oxide," *J.C.S.*, 1930, 1540 (with G. I. Finch). (*Signed by*) H. J. Emeléus, G. H. Cheesman, L. G. Parsons.

CHISHOLM, DONALD, 209, Auldhouse Road, Newlands, Glasgow, S. 3. British. University Lecturer. B.Sc. (Glas.); Ph.D. (Glas.). Lecturer in Chemistry, Glasgow University. Associate of the Institute of Chemistry. "Oxidation Products of β-Pinene," *J.C.S.*, 1924, **125**, 107–113. (*Signed by*) G. G. Henderson, R. Wright, J. Roberts.

COHEN, LOUIS NATHAN, 15, Breda Street, Cape Town, South Africa. British South African. Junior Lecturer at University of Cape Town. B.A. (Cape Town); B.Sc. in Applied and Industrial Chemistry (Cape Town). Being a lecturer, I am interested in chemistry. Associate of Institute of Chemistry of Great Britain and Ireland. (*Signed by*) E. Newbery, J. Smeath Thomas, T. M. Simpson.

CROWFOOT, DOROTHY MARY, The Old House, Geldeston, Beccles, Suffolk. British. Research Student. B.A. (Oxon.). Desiring to receive current literature and to use the Library. (*Signed by*) S. G. P. Plant, J. C. Smith, E. Hope.

GOMM, ALBERT STANLEY, The Biochemical Laboratory, Department of Chemistry, The University, Bristol. British. Research Assistant, University of Bristol, B.Sc., Ph.D. (Bristol). "The Initiation of Flame in Mix-

tures of Carbon Monoxide and Oxygen," *Trans. Faraday Soc.*, 1928, **88**, 470 (with W. E. Garner). "The Exhaustive *o*-Methylation of Quercetin," *J. Amer. Chem. Soc.*, 1931, Dec. issue (with M. Nierenstein). Carried out research under Prof. W. E. Garner from 1927 to 1930. Assistant to Dr. M. Nierenstein from 1930 to present time. "The Thermal Decomposition and Detonation of Lead Azide Crystals," W. E. Garner and A. S. Gomm, *J.C.S.*, 1931, 2123. (*Signed by*) M. Nierenstein, W. E. Garner, F. Francis, M. Taylor.

GRAY, FRANCIS WILLIAM, 31, Hamilton Place, Aberdeen. British. University Lecturer in Chemistry. M.A. (Aberdeen); D.Sc. (Aberdeen). On the teaching staff of Aberdeen University Chemistry Department since 1901, and at present Senior Lecturer. Author of the books: *A Manual of Practical Physical Chemistry* (Macmillan & Co., 1914), and *The Chemistry Tangle Unravelled* (Longmans, 1923). Author or joint author of the researches: "Diamagnetism and Sub-Molecular Structure," *Phil. Mag.*, 1930, X, 191–216. "The Diamagnetism of Polyhalides," *ibid.*, 1931, XI, 81–95. "The Paramagnetism of Polychromates," *ibid.*, 1931, XI, 297–314. Organic researches: *J.C.S.*, 1909, **95**, 2131–2137, 2138–2151. "An Adiabatic Calorimeter," *J.C.S.*, 1914, **105**, 1010–1014. "A Magnetic Study of the Constitution of Compounds of Water and of Aqueous Solutions," *J.C.S.*, 1914, **105**, 2707–2716. (*Signed by*) Alex. Findlay, James Hendrick, J. F. Tocher, Arthur K. Mills, T. Harold Reade.

HAYWARD, AILEEN MARY, Brantwood, Lake Road West, Cardiff (London address in term-time, Bedford College for Women, Regent's Park, N.W. 1). British. Demonstrator in Inorganic and Physical Chemistry. B.Sc. with 1st Class Hons. in Chemistry, and Ph.D. (University College, Cardiff). B.Sc. Special (External) with 2nd Class Hons. in Chem., University of London. Part author of "Vapour Pressures of Aqueous Solutions of Sodium Hydroxide and of Alcoholic Solutions of Calcium Chloride," *Trans. Faraday Soc.*, 1931, **27**, 117. Demonstrator in Inorganic and Physical Chemistry at Bedford College for Women, London, since Sept. 1930. (*Signed by*) James F. Spencer, Florence R. Shaw, Elizabeth E. E. Marler, Corona G. Trew.

JONES, WILLIAM OWEN, 16, Water Street, Penmaenmawr, North Wales. British. B.Sc. (Wales) with 1st Class Hons. in Chemistry (1929); Ph.D. (Wales) (1931); A.I.C. (1931). Research Student at University College of North Wales, Bangor. *J.C.S.*, 1931 (jointly with A. E. Bradfield and F. Spencer. In the press). (*Signed by*) J. L. Simonsen, A. E. Bradfield, F. G. Soper, R. S. Cahn.

MACRAE, THOMAS FOTHERINGHAM, 140, Ebury Street, S.W. 1. British. Research Scholar, Lister Institute. B.Sc. (Glasgow); Ph.D. (Glasgow). "Über die Autoxydation von Leukomethylenblau," *Ber.*, 1931, **64**, 133. "Über den Mechanismus der Oxydationsvorgänge. XXVI. Weitere Studien über die dehydrierende Enzyme der Milch," *Liebig's Ann.*, 1930, **483**, 217 (with H. Wieland). (*Signed by*) Robert Robison, J. Masson Gulland, S. S. Zilva.

MCNAREY, JOHN BUCHANAN, Oakley House, Bath Road, Slough, Bucks. British. Student of chemistry. To receive the publications, attend the meetings, and use the library of the Society. (*Signed by*) F. J. Wilson, W. M. Cumming, R. M. Caven, M. M. J. Sutherland.

MAIR, JOHN ALEXANDER, 53, Cunningham Street, Glasgow, C. 1. British. Lecturer in Chemistry. B.Sc., Ph.D. (Glasgow). Lecturer in Analytical Chemistry, The University, Glasgow (since January 1929); formerly Assistant in Physical Chemistry, Glasgow University and Glasgow Ramsay Memorial Fellow (1922–24); Research in Organic Chemistry. "The Oxidation of

Caoutchouc" (with the late J. McGregor Robertson), *J.S.C.I.*, 1927, XLVI, 41–49T. "The Action of Hypochlorous Acid on Bornylene" (with Prof. G. G. Henderson), *J.C.S.*, 1923, **123**, 1155–1161. (*Signed by*) G. G. Henderson, R. Wright, S. Horwood Tucker.

MEAD, THOMAS HOBSON, 64, Oakley Street, Chelsea, S.W. 3. British. Research Student. B.A., B.Sc. (Oxon.). Part I and Part II in the Honour School of Chemistry, Oxford. *J.C.S.*, 1929, II, 2282. (*Signed by*) Robert Robinson, J. Masson Gulland, S. S. Zilva.

MILLER, CHRISTINA CRUICKSHANK, c/o Mrs. Dickson, 245, Dalkeith Road, Edinburgh. British. University Lecturer in Chemistry. B.Sc., Ph.D., D.Sc., Edinburgh. Research Scholar and Fellow (1920–26). Publications in *Proc. Roy. Soc. Edin.*, 1924 and 1926. University Assistant, 1926–29, and subsequently Lecturer. Keith Medallist of the Roy. Soc. Edin., 1930. *J.C.S.*, 1928, 1847; 1929, 1823, 1829. (*Signed by*) James Kendall, James Walker, Sydney A. Kay.

MOONEY, RONALD BARRON, 14, Argyle Place, Edinburgh. British. Carnegie Research Fellow. M.A., B.Sc., Ph.D. (Edinburgh). Publications in collaboration with Dr. E. B. Ludlam: "Thermal Equilibrium between C_2H_4, I_2, and $C_2H_4I_2$" (*Proc. Roy. Soc. Edin.*, **49**, 160); "Influence of Air and Moisture on the Budde Effect in Br_2" (*ibid.*, **49**, 256); "Decomposition of C_2H_4 by Ultra-violet Light" (*Trans. Faraday Soc.*, **25**, 442). In collaboration with H. G. Reid, B.Sc.: "The Surface Reactions between Ethylene and the Halogens" (*J.C.S.*, 1931, 2597). (*Signed by*) James Kendall, Ernest Bowman Ludlam, H. Gordon Rule.

NEAL, ARTHUR FRANCIS BOUGHTON, Fermor House, Crowborough, Sussex. English. Engaged in Chemical Research. Honours B.A. (Science), Cambridge. Natural Sciences Tripos, Parts I and II, 1927–1930; research, Oct. 1930 to present time. Wishes to keep in touch with modern developments in Chemistry. (*Signed by*) W. J. Pope, F. G. Mann, W. P. Wynne, J. B. Whitworth, F. B. Kipping.

PAREKH, MUKUNDRAI MANEKLAL, Organic Laboratory, University College, Gower Street, W.C. 1. Indian. Research Worker. B.Sc. (Hon.) (Bombay); M.Sc. (1st Class Dist.) Bombay. Demonstrator in Chemistry, Baroda College (Bombay Pres.), India. (1) *J. Ind. Chem. Soc.*, VII, 137–144; (2) *ibid.*, VII, 145–150. (*Signed by*) C. K. Ingold, O. L. Brady, R. J. W. Le Fèvre.

PATTERSON, GEORGE SCOTT, "Weensland," Mornington Rise, Matlock, Derbyshire. British. Chief Works Chemist. Associate of the Textile Institute (A.T.I.); Assistant Works Chemist to the Hawick Hosiery Manufacturers' Association and the Scottish Woollen Trades Employers' Association (Hawick Branch) for 7½ years; Chief Chemist to Messrs. John Smedley, Ltd., Matlock, for 2½ years. At present Chief Chemist to Messrs. Geo. Brettle & Co., Ltd., Hosiery Manufacturers, Belper, Derbyshire. (*Signed by*) Stanley L. Burrows, J. L. Michie, J. A. McKerrow.

PHILLIPS, JOHN THOMAS, 52, Cloncurry Street, Fulham Palace Road, Fulham, S.W. 6. British. Chemist in Radium-Radon Department, St. Bartholomew's Hospital, E.C. 1. 1895–1904, Assistant to Prof. H. E. Armstrong, Central Technical College, S.W. 1904–1918, 1921–1929, at Sir John Cass Technical Institute, Aldgate, E.C. 1918–1921, Chemist to Pierson Morrell, Manufacturing Chemist, Vauxhall, S.E. Have now a desire to keep abreast with recent Chemical work, especially connected with the products from Radium. (*Signed by*) Henry J. S. Sand, A. M. Ward, E. de Barry Barnett.

PRICE, NORMAN JEREDICK, c/o Chance & Hunt, Ltd., Oldbury, Worcs. British. Works Manager. B.A. (Cantab.). A.I.C. Senior Science Master,

Grammar School, Bridlington, Jan.–Dec. 1912. Chief Analytical Chemist, H.M. Factory, Site "B," Oldbury, 1915–1919. Chief Analytical Chemist, Chance & Hunt, Ltd., Oldbury, 1920–1923. Assistant to General Works Manager, Chance & Hunt, Ltd., 1923 to present. With C. S. L. Hawkins, "A New Determination of the Specific Gravities of Solutions of Ammonia," *J.S.C.I.*, **43**, 1924, 113–1 17T. (*Signed by*) Wm. Wardlaw, F. P. Dunn, W. A. S. Calder.

RHODES, JAMES ERIC WYNFIELD, 35, Fielding Crescent, Green Lane, Blackburn, Lancs. British. Lecturer in Chemistry, Municipal Technical College, Blackburn. B.Sc. (Hons.), London. A.I.C. Lecture in Physical and Inorganic Chemistry, Mun. Tech. Coll., Blackburn, 1920 to present date; Works Chemist, British Cellose Co. (now Celanese), 1917; Barton Chemical Works of Aniline Dye Co., 1918–1920. Author of "The Volumetric Determination of Magnesium in Magnesium Chloride Solutions," *J.S.C.I.*, 1927, XLVI, No. 16, pp. 159–160T. "Electrolysis of Potassium Oleate," G. W. F. Holroyd and J. E. W. Rhodes, *J.C.S.*, 1924, **125**, 438. (*Signed by*) G. W. F. Holroyd, B. Prentice, E. Clark, J. W. McMyn, V. Edge.

ROBINSON, GERTRUDE MAUD, 13, Norham Road, Oxford. British. Partly occupied in Chemical Research. M.Sc. (Manchester). Engaged in investigations in Organic Chemistry since 1908. *J.C.S.*, 1914, 252; 1915, 267; 1916, 1078; 1917, 169; 1924, 226; 1929, 2947; 1930, 748. P., 1913, 266. *J.C.S.*, 1914, 1456; 1915, 1753; 1917, 929; 1917, 958; 1918, 639; 1924, 827; 1921, 1470; 1925, 175; 1926, 2204. (*Signed by*) E. Hope, J. C. Smith, A. F. Walden, B. Lambert.

SPRING, FRANK STUART, Hulme Hall, Victoria Park, Manchester. British. University Lecturer. B.Sc., Ph.D. (Liverpool). Research Student, University of Liverpool, 1928–1930. Assistant Lecturer, University of Manchester, 1930 to present date. Publications, *Biochem. J.*, 1930, **24**, 133; *ibid.*, **24**, 136; *J.C.S.*, 1929, 926, 2248, 2807; 1930, 2664. (*Signed by*) Arthur Lapworth, F. P. Burt, D. H. Hey, G. N. Burkhardt.

STEVENSON, ARTHUR JOHN, Eaglehurst, Ditton Hill, Surbiton, Surrey. English. Research Chemist to Manufacturing Chemists. B.A. (Cantab.). Read Natural Science Tripos with Part II, Chemistry. (*Signed by*) W. H. Mills, William Stevenson, Eric K. Rideal.

THOMPSON, MARGOT ELAINE, 174, Cromwell Road, Earl's Court, S.W. 5. British. Research. B.Sc., General (Chemistry, Pure and App. Maths.), June 1930, 2nd class. B.Sc. Special in Chemistry. June 1931, 1st class. Obtained at Bedford College, London. (*Signed by*) James F. Spencer, E. E. Turner, Mary S. Lesslie.

THOMSON, WILLIAM LOCKERBIE, Garden Croft, Crediton, Devon. British. Chemist. B.Sc. (Edin.), A.I.C. Director and Manufacturing Chemist. (*Signed by*) Henry E. Watt, Alexander J. Dey, William Francis Martin.

THORVALDSON, THORBERGUR, University of Saskatchewan, Saskatoon, Saskatchewan, Canada. Canadian. Professor of Chemistry, University of Saskatchewan. B.A. (Manitoba), A.M. (Harvard), Ph.D. (Harvard), F.R.S.C., F.C.I.C. Papers published in *J. Amer. Chem. Soc.*, 1911, 1915, 1922, 1929, 1930; *Ind. and Eng. Chem.*, 1925; *J. Eng. Inst. Canada*, 1922, 1926, 1927, 1928; *Proc. Roy. Soc. Canada*, 1927, 1928; *Canada J. Res.*, 1929. (*Signed by*) F. G. Donnan, C. F. Goodeve, B. Topley.

TOMLINSON, MURIEL LOUISE, Kingswood, Lapworth, Warwickshire. British. Research Student. B.A., Oxford. Desirous of attending meetings and obtaining the literature of the Society. (*Signed by*) S. G. P. Plant, E. Hope, D. Ll. Hammick, Frederick M. Brewer.

UBBELOHDE, ALFRED RENÉ JOHN PAUL, Christ Church, Oxford. Belgian.

Senior Scholar of Christ Church. B.A., 1st Class Hons.; B.Sc., Oxon; B.Sc., 1st Class Hons., London. With A. C. Egerton, F.R.S.: *Trans. Faraday Soc.*, March 1930; *Proc. Roy. Soc.*, Dec. 1931. (*Signed by*) A. S. Russell, C. H. Collie, S. G. P. Plant, C. N. Hinshelwood, E. J. Bowen.

WILLIAMS, ANEURIN, Mayfield, Fairfield Road, Widnes, Lancs. British. Chemist. M.Sc. (Liverpool). 16 years' experience in industrial research work. I desire to receive the *Journals* and keep in touch with modern research developments. (*Signed by*) William Doran, T. P. Hilditch, W. C. M. Lewis, E. C. C. Baly.

WINDAUS, ADOLF, Hospitalstrasse 8/9, Göttingen, Germany. German. Professor of Chemistry. Ph.D. Nobel Laureate. (*Signed by*) George Barger, H. W. Dudley, O. Rosenheim.

WORMS, CHARLES GEORGE MAURICE DE, Milton Park, Egham, Surrey. British. Research Chemist, King's College, London. M.A. (Cantab.), B.A. (Cambridge) in Agricultural Chemistry (1st Class), 1925. Assistant Advisory Chemist, Agricultural Dept., Cambridge, 1925–27. A.I.C. (by examination), 1931. (*Signed by*) Samuel Smiles, K. C. Roberts, L. A. Warren.

Forms of Recommendation for Fellowship recommended by the Council for presentation to ballot under Bye-Law I (2):—

BRYK, ERNST, Frankfurt/Main Höchst, Hochmu'hl 4. Prussian. Chemist and director of the department for literature of the I. G. Farbenindustrie Akt.-Ges., Höchst/Main. Dr. phil. of the University of Vienna. Dissertation: "Über die Einwirkung von Jod und Kalilauge auf Harnsäure." (Interaction of Iodine, Potassium Hydrate, and Uric Acid), Wien, 1894. (*Signed by*) Henri Busch.

KRAENZLEIN, GEORG, Ludwigshafenerstrasse 14, Frankfurt-a-Main/Höchst (Germany). Bavarian. Chemist. Director of I. G. Farbenindustrie Aktiengesellschaft, Frankfurt-a-Main/Höchst. Director of scientific laboratories. Dr. phil. (Würzburg). (*Signed by*) Henri Busch.

MESSONNIER, MARIE MARGUERITE, Bibliothécaire en Chef, Bibliothéque Universitaire de Lyon, 18 Quai Claude Bernard, Lyon (France). French. Librarian, University of Lyons. Licence, University of Lyons. (*Signed by*) V. Grignard.

MEYER, JULIUS, Chem. Institut der Universität, Burgstrasse 8, Breslau 1. Deutsch. Universitäts Professor, Dr. phil. (*Signed by*) C. S. Gibson.

MEYER, ROBERT, Soc. des Usines Chimiques Rhône-Poulenc, St. Fons (Rhône), France. Suisse. Directeur des Recherches Chimiques. "Pour recevoir les publications de la Société." (*Signed by*) H. Gault.

VISHVANATHAN, K., 315, Rastas Peth, Poona 2, India. Hindu. Senior Science Teacher, Shri Pratap High School, Bansda. B.Sc. (Chemistry) of the Bombay University. Desire to get up-to-date information about the advances made in pure and applied chemistry. (*Signed by*) G. B. Kolhatkar.

ZAHN, Karl, Liederbacherstrasse 5, Frankfurt-a-Main/Höchst (Germany). Prussian. Chemist in I. G. Farbenindustrie Aktiengesellschaft, Frankfurt-a-Main/Höchst. Dr. phil. (Marburg). (*Signed by*) Henri Busch.

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BERTHOUD, ALFRED. Matière et atomes. 2nd edition. Paris 1932. pp. 324. ill. 26 *fr.* (*Recd.* 15/1/32.) From the Publishers: M. Gaston Doin & Cie.

BRITTON, HUBERT THOMAS STANLEY. Hydrogen ions: their determination and importance in pure and industrial chemistry. 2nd edition. London 1932. pp. xvi + 590. ill. 25*s.* net. (*Recd.* 13/1/32.) From the Publishers: Messrs. Chapman & Hall.

FARADAY CENTENARY EXHIBITION, 23rd September to 3rd October 1931. Souvenir catalogue and guide. London 1931. pp. 248. ill. (*Reference.*) From the Institution of Electrical Engineers.

FOURCROY, ANTOINE FRANÇOIS DE. Elements of chemistry and natural history. Translated from the 4th and last edition of the original French work, by R. HERON. 4 vols. Edinburgh 1796. (*Reference.*) From Mr. J. A. Audley.

HEDGES, ERNEST SYDNEY. Colloids. London 1931. pp. viii + 272. ill. 12*s.* 6*d.* net. (*Recd.* 2/1/32.) From Mr. Emil Hatschek.

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MENSCHUTKIN, BORIS NIKOLAEVITSCH. Chemistry. Parts I and II. Moscow 1931—32. pp. 136, 304. ill. [In Russian.] (*Recd.* 4/1/32.) From the Author.

ODDO, GIUSEPPE. Trattato di chimica generale e inorganica. 2nd edition. Palermo 1931. pp. xxiv + 886. ill. *L.* 90. (*Recd.* 19/12/31.) From the Publisher: Casa Editrice Remo Sandron.

II. *By Purchase.*

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GAMOW, G. Constitution of atomic nuclei and radioactivity. Oxford 1931. pp. viii + 114. ill. 10*s.* 6*d.* net. (*Recd.* 17/12/31.)

GERLACH, WALTHER, and SCHWEITZER, EUGEN. Foundations and methods of chemical analysis by the emission spectrum. Authorised translation. London [1931]. pp. 123. ill. 12*s.* 6*d.* net. (*Recd.* 17/12/31.)

GLASS RESEARCH ASSOCIATION. Bulletin. Nos. 4—9 and 13. London 1922—25. (*Reference.*)

KORTÜM, G. Neuere Forschungen über die optische Aktivität chemischer Moleküle. (Sammlung, N.F. Heft 10.) Stuttgart 1932. pp. 118. ill. (*Reference.*)

MANTELL, CHARLES LETNAM. Industrial electrochemistry. New York 1931. pp. viii + 528. ill. 30*s.* net. (*Recd.* 17/12/31.)

RUARK, ARTHUR EDWARD, and UREY, HAROLD CLAYTON. Atoms, molecules and quanta. New York 1930. pp. xviii + 790. ill. 42*s.* net. (*Recd.* 19/12/31.)

SCHEIBER, JOHANNES, and SÄNDIG, KURT. Artificial resins. Translated by ERNEST FYLEMAN. London 1931. pp. viii + 448. ill. 30*s.* net. (*Recd.* 19/12/31.)

SCHRÖTER, W. Das Rhenium. (Sammlung, N.F. Heft 11.) Stuttgart 1932. pp. 60. (*Reference.*)

STEWART, ALFRED WALTER. Recent advances in organic chemistry. 6th edition. 2 vols. London 1931. pp. xii + 430, xii + 432. ill. 42*s.* net. (*Recd.* 19/12/31.)

WEYGAND, CONRAD. Quantitative analytische Mikromethoden der organischen Chemie in vergleichender Darstellung. Leipzig 1931. pp. xii + 279. ill. *M.* 18. (*Recd.* 11/1/32.)

WYCKOFF, RALPH W. G. The structure of crystals. 2nd edition. (American Chemical Society Monograph Series.) New York 1931. pp. 498. ill. 7.50. (*Recd.* 22/12/31.)

III. *Pamphlets.*

FREJKA, J., ZIKA, J., and HAMERSKÝ, H. Sur la tétranitrosopyrocatéchine et quelques ses dérivés. (*Publ. Fac. Sci. Univ. Masaryk*, 1931, No. 137.) [In Czecho-Slovakian. French summary.]

INDIAN INSTITUTE OF SCIENCE. Investigations on the spike-disease of sandal. I and II. Bangalore 1931. pp. 16.

KOSAKA, HIROSI. Die Beziehungen zwischen den verscheidenen physiologischen Erscheinungen der Pflanzen und den an Vegetationsorganen in Erscheinung tretenden Farbstoffen. III. Ueber die Beziehungen zwischen der Wachstumstätigkeit und der Anthocyaninbildung bei *Abutilon avicennae*. (From the *J. Dep. Agric. Kyushu Imp. Univ.*, 1931, **3**.)

MIHOLIC, STANKO STANKOV. Kemijska analiza subtermalnog vrela Sutinsko kod Potsuseda. (From the *Bull. Soc. Chim. Yougoslav.*, 1931, **3**.)

NATIONAL SMOKE ABATEMENT SOCIETY. The smoke abatement handbook. Manchester 1931. pp. 47.

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 4th, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
George Henry Barbrook	Dec. 7th, 1905.	Nov. 10th, 1931.
James Furnival Eardley	Feb. 16th, 1911.	Aug. 20th, 1931.

Mr. G. R. Gedye was formally admitted a Fellow of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Clarence Halse Cliff, Culwulla Chambers, Castlereagh Street, Sydney, N.S.W.
Eluned Leyshon, B.Sc., 28, Windmill Terrace, St. Thomas, Swansea.
Stotherd Mitchell, Ph.D., D.Sc., Rosebank, Bishopbriggs, Glasgow.
Gouri Kanta Mukherjee, M.Sc., Gourepore Paint Works, P.O. Garifa, Dist. 24 Pergannas, Bengal.
Thomas Cross Robinson, 85, Hillview Gardens, Hendon, N.W. 4.
George Thomson, Ph.D., 114, Forrest Street, Airdrie.
Herbert Cubitt Gostling Vincent, M.A., 54, Owlstone Road, Cambridge.

The following papers were read :

"Hydrazine formation in the synthesis and decomposition of ammonia. Part I. Synthesis of hydrazine and ammonia by cathode rays." By G. R. GEDYE and T. E. ALLIBONE.

"Hydrazine formation in the synthesis and decomposition of ammonia. Part II. The photochemical decomposition of ammonia." By G. R. GEDYE and E. K. RIDEAL.

"Hydrazine formation in the synthesis and decomposition of ammonia. Part III. A note on the synthesis of hydrazine at catalytic surfaces." By G. R. GEDYE and E. K. RIDEAL.

"The stereoisomeric 2 : 3 : 5 : 6-tetramethylpiperazines. Part III. The reduction products of 2 : 3 : 5 : 6-tetramethylpyrazone methiodide." By F. B. KIPPING.

"Formaldehyde condensations with aliphatic ketones. Part I." By G. T. MORGAN and E. L. HOLMES.

Ordinary Scientific Meeting, Thursday, February 18th, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

Messrs. E. A. Wagstaff, R. A. E. Galley, G. F. Bloomfield, and S. Anwar Ullah were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Donald Russell Duncan, B.Sc., 84, Haydon Park Road, Wimbledon, S.W. 19.
Eric Higgins, Ph.D., Punchetts, Tewin Wood, Hertfordshire.
Sanuro Ishiwata, Tokyo Imperial University, Tokyo, Japan.
Velur Venkitaseshadyer Sivarama Iyer, M.A., Dyson Perrins Laboratory, South Parks Road, Oxford.
John Butler Day-Lewis, The Square, Riverhead, Kent.
Alan Richardson Raper, M.A., Messrs. The Mond Nickel Co., Ltd., Bashley Road, N.W. 10.
Arnold Shepherdson, B.Sc., 19, Dawlish Road, Chorlton-cum-Hardy, Manchester.
Kyosuke Tsuda, Tokyo Imperial University, Tokyo, Japan.

The following Forms of Recommendation have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of:—

Augustine F. S. Musante, A.B., M.A., Sun Oil Company Research Laboratory, Norwood, Penn., U.S.A.
Norman Arthur Shepard, Ph.D., 154, Casterton Avenue, Akron, Ohio, U.S.A.
Lothar Wöhler, Prof., Dr.phil., Technische Hochschule, Darmstadt, Germany.

Mr. N. L. Anfilogoff and Dr. A. I. Vogel were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Choji Araki.
Cecil Edwin Henry Bawn, B.Sc.
George Allan Beattie.
Bernard William Bradford, B.Sc., Ph.D., A.R.C.S.
Ernst Bryk, Dr.phil.
Donald Chisholm, B.Sc., Ph.D.
Louis Nathan Cohen, B.A., B.Sc.
Dorothy Mary Crowfoot, B.A.
Albert Stanley Gomm, B.Sc., Ph.D.
Francis William Gray, M.A., D.Sc.
Aileen Mary Hayward, B.Sc., Ph.D.
William Owen Jones, B.Sc., Ph.D., A.I.C.
Georg Kraenzlein, Dr.phil.
Thomas Fotheringham Macrae, B.Sc., Ph.D.
John Buchanan McNarey.
John Alexander Mair, B.Sc., Ph.D.
Thomas Hobson Mead, B.A., B.Sc.
Marie Marguerite Messonnier.
Julius Meyer, Dr.-phil.
Robert Meyer.
Christina Cruickshank Miller, Ph.D., D.Sc.
Ronald Barron Mooney, M.A., B.Sc., Ph.D.
Arthur Francis Boughton Neal, B.A.
Mukundrai Maneklal Parekh, M.Sc.
George Scott Patterson.
John Thomas Phillips.
Norman Jeredick Price, B.A., A.I.C.
James Eric Wynfield Rhodes, B.Sc., A.I.C.

Gertrude Maud Robinson, M.Sc.
Frank Stuart Spring, B.Sc., Ph.D.
Arthur John Stevenson, B.A.
Margot Elaine Thompson, B.Sc.
William Lockerbie Thomson, B.Sc., A.I.C.
Thorbergur Thorvaldson, B.A., A.M., Ph.D.
Muriel Louise Tomlinson, B.A.
Alfred René John Paul Ubbelohde, B.A., B.Sc.
K. Vishvanathan, B.Sc.
Aneurin Williams, M.Sc.
Adolf Windaus, Ph.D.
Charles George Maurice de Worms, M.A.
Karl Zahn, Dr.-phil.

An informal discussion on "The significance of velocity measurements in relation to the benzene substitution problem" was opened by Dr. A. E. Bradfield, and continued by Prof. A. Lapworth, Prof. R. Robinson, Prof. G. M. Bennett, Dr. R. G. W. Norrish, and Prof. D. H. Peacock.

THIRD PEDLER LECTURE.

The third Pedler Lecture, entitled, "The Life and Work of Otto Wallach," will be delivered by Professor L. Ruzicka, of Zürich, on Thursday, March 10th, 1932, at 5.30 p.m. The lecture will be given in the Meeting Hall of the Institution of Mechanical Engineers (Storey's Gate, Westminster, S.W. 1), by courtesy of the Council of that Institution. Tickets of admission will not be required.

THE 91ST ANNUAL GENERAL MEETING AND THE ANNIVERSARY DINNER, GLASGOW, MARCH 18TH, 1932.

Annual General Meeting.

The Annual General Meeting will be held in the Fore Hall of the University of Glasgow, on Friday, March 18th. The business portion of the meeting (open to Fellows only) will commence at 4 p.m., and will be followed at 4.30 p.m. by the Presidential Address entitled "The Publication of Chemical Literature," to be delivered by Professor G. G. Henderson, M.A., D.Sc., F.R.S.

Tea will be served at the Glasgow University Union (University Avenue) at 3.30 p.m.

Anniversary Dinner.

The Anniversary Dinner will be held the same evening at the Grosvenor Restaurant, Gordon Street (opposite the Central Station) at 7 for 7.15 p.m. Application for tickets (price 12*s.* 6*d.* each for lady or gentleman) should be made as soon as possible to Mr. S. E. Carr, The Chemical Society, Burlington House, London, W. 1, accompanied by a remittance for the number of tickets required.

Civic Reception, Thursday, March 17th.

A Civic Reception will be held by the Lord Provost and the Corporation of the City of Glasgow in the City Chambers, Glasgow, on Thursday, March 17th, at 8.15 p.m. Admission will be by invitation only.

Visits, Saturday, March 19th.

Invitations have been received to visit Nobel's Explosives Factory at Ardeer, and the Provan Chemical Works, Provanmill, Glasgow. For those not desiring to make these visits, a tour by motor coach to Loch Lomond will be arranged; if, however, the weather is unfavourable, places of interest in the city will be visited.

Motor conveyance will leave City Chambers, George Square, for

Ardeer, at 9.15 a.m. (arriving back at 5.45 p.m.). Fare 3*s.* 6*d.*

Provanmill, at 9.45 a.m. (arriving back at 12.30 p.m.).

Loch Lomond (or places of interest), at 10.0 a.m. (arriving back at 1 o'clock p.m.).

The number of invitations is limited, prior consideration being given to Fellows of the Society not residing in, or near, Glasgow, and the invitation to Ardeer is not extended to ladies.

Fellows desiring to attend the Civic Reception or to take part in the visits should apply before March 11th to Dr. W. M. Cumming (Royal Technical College, 204, George Street, Glasgow), who will supply full particulars.

Railway Facilities.

Fellows attending the meetings will be able to travel by rail from all parts of the country to Glasgow at the reduced rate of an ordinary single fare and one-third for the double journey. No minimum distance is fixed. Tickets will be available from March 17th to 21st (inclusive). Those desiring to take advantage of this privilege should apply *before March 11th* to the Assistant Secretary for a signed voucher. These facilities, however, will be withdrawn unless at least 100 persons avail themselves thereof.

Hotels.

Full particulars of the hotels (with charges) in Glasgow can be obtained from Dr. W. M. Cumming, or the Assistant Secretary.

The Council hopes that Fellows resident in Scotland will attend the meetings, and that many Fellows living south of the Tweed will make a special effort to be present.

List of papers, or Abstracts thereof, received between January 21st and February 18th, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Potassium dibromoiodide hydrate," by G. H. CHEESMAN and J. H. MARTIN.

"Substituted aromatic aldehydes in Hantzsch's pyridine condensation. Part III. Nitromethoxy- and nitrohydroxy-benzaldehydes." By L. E. HINKEL, E. E. AYLING, and W. H. MORGAN.

"The vapour pressure of water over aqueous solutions of the chlorides of the alkaline-earth metals. Part IV. Evaluation of activity coefficients." By J. R. I. HEPBURN.

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part X. Preparation of phthalazine derivatives from 4-aminoazobenzene and 4′-nitro-4-aminoazobenzene." By F. M. ROWE and F. S. TOMLINSON.

"The parachor and chemical constitution. Part XVII. Fluorine compounds." By E. C. ALLEN and S. SUGDEN.

"The solubility of picric acid in mixed solvents. Part II. Benzene–alcohol mixtures." By J. C. DUFF and E. J. BILLS.

"Preliminary synthetic experiments in the morphine group. Part III. Some derivatives of papaveroline and laudanosoline." By Z. KITASATO and R. ROBINSON.

"Preliminary synthetic experiments in the morphine group. Part IV. A dehydro-derivative of laudanosoline hydrochloride and its constitution." By R. ROBINSON and S. SUGASAWA.

"Synthesis of 1-, 2-, 3-, and 4-methylphenanthrenes." By R. D. HAWORTH.

"Hydroxy-carbonyl compounds. Part VI. The application of the Simonis reaction to *p*-cresol." By A. ROBERTSON and W. F. SANDROCK.

"The viscosities of phosphoric esters." By D. P. EVANS and W. J. JONES.

"A thermal analysis of the system lithium nitrate–thallous nitrate." By H. V. A. BRISCOE, C. EVANS, and P. L. ROBINSON.

"The dimorphism of certain aliphatic compounds. Part II." By J. W. C. PHILLIPS and S. A. MUMFORD.

"The configuration of phthalylbenzidine." By E. E. TURNER.

"The polarity of the co-ordinate link. Part I. The constitution of the arsinimines." By F. G. MANN.

"A note on the preparation and dinitration of *N*-phenylpiperidine." By R. J. W. LE FÈVRE.

"Some physical properties of the hydrides of selenium and tellurium." By P. L. ROBINSON and W. F. SCOTT.

"The properties of nicotine and its derivatives. Part IV. Refractive dispersion. Part V. Magnetic rotatory dispersion." By T. M. LOWRY and C. B. ALLSOPP.

"The properties of nicotine and its derivatives. Part VI. Electrical conductivities. Part VII. Electrometric titrations." By T. M. LOWRY and W. V. LLOYD.

"The reactions of ω-substituted acetophenone derivatives. Part II. The mechanism of the interaction of ω-halogenoacetophenones with primary and tertiary bases." By J. W. BAKER.

"The salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part III. The carbonyl group in ethyl benzoate." By J. W. BAKER and L. HEY.

"The addition of halogens to unsaturated acids and esters. Part IV. The rate of addition of bromine to cinnamic acid in acetic acid." By D. M. WILLIAMS.

"The reactions of phenol with hydrogen at high pressures." By C. M. CAWLEY.

"The infra-red spectra and structure of tautomeric compounds." By C. E. H. BAWN.

"Bromine-chloride hydrate." By S. A. ULLAH.

"Chlorine hydrate." By S. A. ULLAH.

"The alkaloids of ergot. Part III. Ergine, a new base obtained by the degradation of ergotoxine and ergotinine." By S. SMITH and G. M. TIMMIS.

"The equilibria between mixtures of carbon monoxide and carbon dioxide at various pressures in contact with steels of different carbon concentrations at temperatures ranging from 750° to 1150°." By A. BRAMLEY and H. D. LORD.

"Some notes on the iron–carbon equilibrium diagram." By A. BRAMLEY.

"Azo-sulphites of dis-azonaphthols and their fission into the corresponding amino-azonaphthols." By A. T. KING.

"Sulphites of azo-compounds containing two hydroxy-groups." By A. T. KING.

"The constitution of cryptopine hydrochloride." By R. D. HAWORTH and T. W. SIMPSON.

"Some derivatives of *d-nor*-ψ-ephedrine." By (MISS) J. M. STRATTON and F. J. WILSON.

"The primary dissociation constants of the methyl*cyclo*hexane-1 : 1-diacetic acids. An anomaly between the physical and chemical tests of the valency deflexion hypothesis." By D. J. G. IVES, R. P. LINSTEAD, and H. L. RILEY.

"Surface tension determinations of malonic esters, and the constitutive nature of the parachor." By A. B. Beck, A. K. Macbeth, and S. W. Pennycuick.

"The action of phosphorus pentachloride on acetanilide." By O. G. Backeberg.

"The conversion of *l*-phenylmethylcarbinol into dextrorotatory and lævorotatory α-chloroethylbenzene." By A. H. J. Houssa and H. Phillips.

"Apparatus for quantitative catalytic reduction." By H. Paget and W. Solomon.

"Separation of normal long-chain hydrocarbons by fractional distillation in high vacuum." By (Miss) H. S. Gilchrist and (Miss) B. Karlik.

"Note on a reaction of fluorene." By A. J. Hailwood and R. Robinson.

"The nitration of *o*-benzylvanillin." By P. V. Nair and R. Robinson.

"Some further examples of kationoid reactivity of aromatic compounds. Part I." By W. Bradley and R. Robinson.

"Synthesis of derivatives of myristicin." By W. Baker, (Miss) L. V. Montgomery, and (Miss) H. A. Smith.

"*Cannabis indica* resin. Part III. The constitution of cannabinol." By R. S. Cahn.

"Strychnine and brucine. Part XIX. Reduction of strychnine methosulphate by means of sodium amalgam in the presence of carbon dioxide." By (the late) W. H. Perkin, jun., R. Robinson, and J. C. Smith.

"Rhenium oxychloride." By H. V. A. Briscoe, P. L. Robinson, and A. J. Rudge.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

Bolam, Thomas Robert. The Donnan equilibria and their application to chemical, physiological and technical processes. London 1932. pp. viii + 154. ill. 9*s*. net. (*Recd.* 15/2/32.)

From the Publishers: Messrs. G. Bell & Sons.

British Association for the Advancement of Science. Chemistry at the centenary (1931) meeting. Cambridge 1932. pp. xii + 272. ill. *Reference*. 7*s*. 6*d*. net.

From the Organising Committee of the Chemistry Section.

Harden, Arthur. Alcoholic fermentation. 4th edition. (Monographs on Biochemistry.) London 1932. pp. viii + 244. 15*s*. net. (*Recd.* 3/2/32.)

From the Publishers: Messrs. Longmans, Green & Co.

KAST, HERMANN, and METZ, LUDWIG. Chemische Untersuchung der Spreng- und Zündstoffe. Braunschweig 1931. pp. x + 583. ill. *M*. 40. (*Recd*. 5/2/32.) From Mr. A. Marshall.

PAINT, VARNISH, LACQUER, ENAMEL and COLOUR MANUFACTURE. Vol. I, etc. London 1931 +. (*Reference*.) 10*s*. per annum. From the Publishers: Messrs. Leonard Hill.

SOUTHCOMBE, J. E. Lubricating oil tests and their significance. London 1932. pp. 69. ill. 2*s*. 6*d*. net. (*Recd*. 8/2/32.) From the Publishers: Messrs. H. Wells Oil Co.

II. *By Purchase.*

KAUSCH, OSKAR. Die aktive Kohle, ihre Herstellung und Verwendung. Ergänzungsband. Halle (Saale) 1932. pp. viii + 200. ill. *M*. 17. (*Recd*. 21/1/32.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Bulletin No. 51. A soil survey of the swamps of the Lower Murray River. By J. K. TAYLOR and HARRY GORDON POOLE. Melbourne 1931. pp. 43. ill.

—— —— Bulletin No. 52. The soils of Australia in relation to vegetation and climate. By JAMES ARTHUR PRESCOTT. Melbourne 1931. pp. 82. ill.

IMPERIAL INSTITUTE. The mineral industry of the British Empire and foreign countries. China-clay (kaolin). London 1931. pp. 100.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Recent advances in the fermentation industries. By JOHN VARGAS EYRE. Streatfeild Memorial Lecture, 1931. London 1932. pp. 20.

MINES DEPARTMENT. *Safety in Mines Research Board*. Paper No. 73. The combustion of coal dust. By A. L. GODBERT and RICHARD VERNON WHEELER. London 1932. pp. 21. ill.

NAG, NAGENDRA CHANDRA, and BANERJEE, H. N. The proteolytic enzymes of *Carica Papaya*. I and II. (From the *Trans. Bose Research Inst., Calcutta*, 1930–31.)

—— —— The proteolytic enzyme in the seeds of *Phaseolus Mungo*, L. (From the *Trans. Bose Research Inst., Calcutta*, 1930–31.)

SCHLAPFER, P., and BRUNNER, M. Polymerisation und thermischer Zerfall des Acetylens. (From the *Ber. 10 Int. Kong. Acetylen*, 1930.) pp. 25.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research*. Special Report No. 17. The estimation of free calcium oxide and hydroxide. By B. BAKEWELL and GEORGE EDWARD BESSEY. London 1931. pp. iv + 21.

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 3rd, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The following list of nominations for vacant places on the Council was read from the Chair :

Vice-Presidents, who have filled the office of President (2 vacancies) :

*H. B. BAKER, *Sir WILLIAM J. POPE.

Vice-Presidents, who have not filled the office of President (2 vacancies) :

*G. T. MORGAN, *T. SLATER PRICE.

Treasurer : EMILE MOND.

Ordinary Members of Council :

Town Members (*i.e.* those resident within a radius of fifty miles from Charing Cross) (3 vacancies) :

*A. J. ALLMAND, *F. P. DUNN, †E. H. FARMER, †G. I. FINCH, †L. F. GILBERT, †E. E. TURNER.

Country Members (*i.e.* those resident beyond a radius of fifty miles from Charing Cross) (4 vacancies) :

†J. B. FIRTH (Nottingham), *†F. E. FRANCIS (Bristol), *I. M. HEILBRON (Liverpool), †H. H. HODGSON (Bradford), †H. S. PATTERSON (Leeds), †J. REILLY (Cork), †E. H. RODD (Timperley).

Dr. Harold King and Mr. W. M. Colles were appointed Scrutators to assist in the counting of votes recorded in the election of the Ordinary Members of Council (Town and Country).

* Nominated by Council under Bye-Law VI.
† Nominated by Fellows under Bye-Law VI.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Ivan Walter Henry Harris, B.Sc., A.R.C.S., 68, Finborough Road, S.W. 10.
Harold Clifford Higinbotham, 73, Redcliff Gardens, S.W. 10.
Walter Horridge, M.C., Heather Lea, Bury.
Alexander Lang Morrison, B.Sc., D.Phil., 27, Seabank Road, Wallasey, Cheshire.
Sydney Diggary Nicholas, B.A., The Chemistry Department, The University, Edgbaston, Birmingham.

The following papers were read :

" The properties of nicotine and its derivatives. Part IV. Refractive dispersion. Part V. Magnetic rotatory dispersion." By T. M. LOWRY and C. B. ALLSOPP.

" The properties of nicotine and its derivatives. Part VI. Electrical conductivities. Part VII. Electrometric titrations." By T. M. LOWRY and W. V. LLOYD.

" The reactions of ω-substituted acetophenone derivatives. Part II. The mechanism of the interaction of ω-halogeno-acetophenones with primary and tertiary bases." By J. W. BAKER.

" The salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part III. The carbonyl group in ethyl benzoate." By J. W. BAKER and L. HEY.

" Contributions to the chemistry of selenium. Part I. The reaction of selenium dioxide with ketones." By H. L. RILEY and J. F. MORLEY.

" Contributions to the chemistry of selenium. Part II. The reaction of selenium dioxide with aldehydes." By H. L. RILEY and N. A. C. FRIEND.

THIRD PEDLER LECTURE.

Extra Meeting held at the Institution of Mechanical Engineers on Thursday, March 10th, 1932, at 5.30 p.m. In the absence of the President, through illness, the Chair was occupied by Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President.

Professor Dr. L. Ruzicka, of Zürich, delivered the Third Pedler Lecture, entitled " The Life and Work of Otto Wallach." At the conclusion of the Lecture, a vote of thanks to Professor Ruzicka was proposed by Professor H. E. Armstrong. This was seconded by Professor R. Robinson, and carried with acclamation, Professor Ruzicka making brief acknowledgment.

ORDINARY SCIENTIFIC MEETING, THURSDAY, MAY 19TH, 1932, AT 8 P.M.

It has been found necessary to postpone the Discussion on " Orientation in Addition Reactions " announced for this meeting,

but its place will be taken by an informal Discussion on "Some Aspects of Asymmetric Synthesis," which will be opened by Professor A. McKenzie, M.A., D.Sc., F.R.S.

INSTITUTE OF FUEL.

A meeting of the Institute of Fuel will be held in the Chemical Society's Rooms on Wednesday, May 11th, at 6 p.m., when Professor Ernst Berl, of Darmstadt, will present a paper entitled "The Artificial Formation of Bituminous Coal and Mineral Oil Hydrocarbons."

The paper is an extension of the one written by Professor Berl for the Third International Coal Conference at Pittsburgh in November last, and brings the subject of his research work more up to date. It is claimed that the experiments at Darmstadt indicate that cellulose can be the parent substance not only of bituminous coal, but also of mineral oil hydrocarbons. Professor Berl will show samples of the coal substances he has actually produced from cellulose.

Fellows of the Chemical Society are invited to attend the meeting, and to take part in the discussion. Advance copies of the paper will be available about a fortnight before the meeting, and will be obtainable from Mr. P. C. Pope, Secretary, The Institute of Fuel, 53, Victoria Street, S.W. 1.

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Wednesday, June 1st, 1932. Applications from Fellows will receive prior consideration.

All persons who received grants in June 1931, or in June of any previous year, whose accounts have not been declared closed by the Council are reminded that reports must be returned by June 1st.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income arising from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

List of Papers, or Abstracts thereof, received between February 18th and March 10th, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The mercuriation of pyridine." By N. P. McCleland and R. H. Wilson.

"Reduction products of certain cyclic methyl imines. Part II." By J. Graymore.

"The mechanism of some addition reactions of nitroethylenes." By B. Flürscheim and E. L. Holmes.

"The effect of a basic magnesium carbonate on a copper surface." By T. Hagyard.

"The nitration of the halogenoethylenes." By R. B. Burrows and L. Hunter.

"The photodecomposition of chlorine dioxide solutions." By E. J. Bowen and W. M. Cheung.

"β-Pseudognoscopine." By M. Greenwood and R. Robinson.

"Compound formation between nitrobenzenes." By J. P. Wibaut.

"Constitutional factors controlling prototropic changes in carbonyl compounds. Part II. Acid and base catalysis in the bromination of halogenated acetones." By H. B. Watson and E. D. Yates.

"The influence of solvents and of other factors on the rotation of optically active compounds. Part XXIX. The rotation dispersion of camphor, camphoroxime, *iso*nitrosocamphor, and oxymethylenecamphor." By T. S. Patterson, E. F. M. Dunn (Mrs. R. C. Hamilton), C. Buchanan, and J. D. Loudon.

"The influence of solvents and of other factors on the rotation of optically active compounds. Part XXX. The rotation dispersion of various derivatives of camphor." By T. S. Patterson and J. D. Loudon.

"Experiments on the synthesis of rotenone and its derivatives. Part II. The synthesis of rissic acid and of derric acid, and the constitution of rotenone, deguelin, and tephrosin." By A. Robertson.

"Lichen acids. Part II. The constitution of evernic acid and the synthesis of methyl evernate." By A. Robertson and R. J. Stephenson.

"Reactions of nitrosophenols. Part I. Diazomethane. A new criterion for nitrosophenols." By H. H. Hodgson.

"The decomposition of lead nitrate in molten potassium nitrate." By K. Laybourn and W. M. Madgin.

"A ring homologue of tropacocaine." By B. K. BLOUNT and R. ROBINSON.

"Experiments on the synthesis of physostigmine (eserine). Part VI. A synthesis of *dl*-esermethole methopicrate." By F. E. KING and R. ROBINSON.

"Synthetical experiments bearing on the problem of the nature of betanin and related nitrogenous anthocyanins. Part I." By (Mrs.) A. M. ROBINSON and R. ROBINSON.

"The refractivities of ovalbumin and serum albumin in aqueous solutions of variable concentration and p_H." By D. E. WOODS and E. B. R. PRIDEAUX.

"The composition of the compounds of picryl chloride and of *s*-trinitrobenzene with benzene." By D. L. HAMMICK, G. M. HILLS, and J. HOWARD.

"Note on bromopiperitone." By G. I. DAVIES and J. L. SIMONSEN.

"A synthesis of *cis*- and *trans-dl*-1 : 1-dimethyl-2-γ-ketobutyl*cyclo*propane-3-carboxylic acids." By J. OWEN and J. L. SIMONSEN.

"Salt catalysis in the Schotten–Baumann reaction." By H. HENSTOCK.

"Research on amines. Part V." By H. J. S. KING.

"The influence of *Bz*-substituents upon some reactions of the anthrones. Part I." By E. DE B. BARNETT and C. L. HEWETT.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 5th, 1932.

CLIFF, CLARENCE HALSE, "Culwulla Chambers," Castlereagh Street, Sydney. British Subject. Dentist. Specially interested in chemistry connected with dental practice. Intend specialising in dental Materia Medica. The literature and *Journals* of the Chemical Society would be a great assistance in carrying out my work. (*Signed by*) G. Spurge, Edmond Samuels, Richard W. Challinor.

DUNCAN, DONALD RUSSELL, 84, Haydon Park Road, Wimbledon, S.W. 19. British. Chemical Research Worker. Abstractor for B.C.A. B.Sc. (London). Research work published in *J.C.S.* (in collaboration with Mr. H. W. Cremer). (Read paper on "Nitrogen Tri-iodide" before the Society, Dec. 4, 1930.) "Nitrogen Tri-iodide" (1930, 2750). "A Study of the Polyhalides. Part I. Methods of Preparation" (1931, 1857); "Part II. Physical Properties" (1931, 2243). (*Signed by*) Samuel Smiles, L. A. Warren, L. J. Burrage.

HARRIS, IVAN WALTER HENRY, 68, Finborough Road, S.W. 10. British. Research Student. B.Sc. (Lond.); A.R.C.S. (Royal College of Science) (2nd Class Hons.). "Bromine Hydrate" recently accepted for publication. (*Signed by*) H. B. Baker, H. L. Riley, G. H. Cheesman.

HIGGINS, ERIC, Punchetts, Tervin Wood, Hertfordshire. British. Technical Director, United Water Softeners, Ltd. Ph.D., Columbia University, New York City. Worked out the Wimmer–Higgins Fathardening process and established manufacture at Brake Oldenbury (still operating). Discovered processes for manufacture of 2 : 3-hydroxynaphthoic acid and its arylides (Brenthol AS), and established manufacture in England (British Synthetics, Ltd.). Worked out commercial manufacture of "natural" zeolites and established manufacture in England (United Water Softeners, Ltd.). Commercial agreements have prohibited publications for the most part. This is now not the case. (*Signed by*) W. R. Ormandy, J. W. Blagden, J. P. O'Callaghan, Arthur E. Everest, Francis V. Darbishire, E. V. Evans.

HIGINBOTHAM, HAROLD CLIFFORD, 73, Redcliffe Gardens, S.W. 10. British. Chemist and Druggist. Member of the Pharmaceutical Society (London). I desire to receive the publications of the Society and to attend the meetings and use the Library. (*Signed by*) J. C. Crocker, F. H. Lowe, C. Dorée, D. W. E. Barker.

HORRIDGE, Capt. WALTER, M.C., Heather Lea, Bury, Lancashire. British. Director, Horridge & Cornall, Ltd. (Calico Printers). Student, Chemistry and Chemical Technology, College of Technology, Manchester, Oct. 1905–July 1908. (*Signed by*) Jocelyn Thorpe, Cecil J. T. Cronshaw, John Thomas, E. H. Rodd, R. Brightman, W. A. Silvester, P. Chorley.

ISHIWATA, SABURO, Pharmaceutical Institute, Tokyo Imperial University, Tokyo, Japan. Japanese. Assistant of Pharmaceutical Institute, T.I.U. Dr. of Pharmacy (Tokio Imperial University). (*Signed by*) Yasuhiko Asahina, Heisaburo Kondo, Shigehiko Sugasawa.

IYER, VELUR VENKITASESHARIYER SIVARAMA, Dyson Perrins Laboratory, South Parks Road, Oxford. Indian. Research Student. M.A. (Calcutta). Three years' research with Dr. J. J. Sudborough in the Indian Institute of Science, Bangalore (1922–1925). Six years' teaching experience as Asst. Prof. of Chemistry, Maharaja's College, Emakulam, S. India. (*Signed by*) Robert Robinson, D. Ll. Hammick, P. V. Nair.

LEWIS, JOHN BUTLER DAY, The Square, Riverhead, Kent. British. Pharmacist and Technical Chemist. M.P.S., and Assistant to Francis E. Corringham. (*Signed by*) Francis E. Corringham, Frederick Hayter, William H. Ballantyne.

LEYSHON, ELUNED, 28, Windmill Terrace, St. Thomas, Swansea, Glam. British. Science Mistress. General Hons. B.Sc. (Physics, Physiology, Chemistry), 2nd Class 1930, Hons. Chem., 1st Class, 1931 (University of London). Student at University College, London, 1927–1931. Chemistry and General Science Mistress at Glanmôr Secondary Girls' School, Swansea, 1931–to date. (*Signed by*) L. F. Gilbert, O. L. Brady, Henry Terrey.

MITCHELL, STOTHERD, Rosebank, Bishopbriggs, Glasgow. British. Carnegie Teaching Fellow, University of Glasgow. B.Sc., Ph.D., D.Sc. (Glasgow). University Assistant, 1923–1927, and subsequently a Carnegie Teaching Fellow. *J. Biol. Chem.*, 1929, **82**, 727; *J.C.S.*, 1925, 208; 1926, 1333; 1928, 3258; 1930, 1829. (*Signed by*) G. G. Henderson, R. Wright, David T. Gibson.

MORRISON, ALEXANDER LANG, 27, Seabank Road, Wallasey, Cheshire. British. Research Student. B.Sc. with Hons. in Chemistry (Glasgow); D.Phil. (Frankfurt a. Main). Two years at Glasgow University as Demonstrator and Research Student. One and a half years at Frankfurt a. Main University as Research Student. Published work in *Zeit. für physiol. Chemie*, **198**, 165. At present at Liverpool University working on Ergosterol. (*Signed by*) William Doran, R. A. Morton, I. M. Heilbron.

MUKHERJEE, GOURIE KANTA, Gourepore Paint Works, Jenson & Nicholson (India), Ltd., P.O. Garifa, Dist. 24, Pergannas (Bengal), India. Bengali, Brahmin; Indian, Hindu. Chief Chemist. M.Sc. (Calcutta University). Research Scholar (Calcutta University). Temporary Lecturer in Chemistry, Govt. College, Hoogly (Bengal). Chief Chemist and Paint Foreman, Napier Paint Works, Calcutta. Asst. Chemist, J. & R. Hutchison, Calcutta. (*Signed by*) J. N. Mukherjee, P. C. Rây, J. C. Bardhan.

NICHOLAS, SYDNEY DIGGARY, The Chemistry Dept., The University, Edgbaston, Birmingham. British. Lecturer in Chemistry, Birmingham University. B.A. (Oxon.). Various papers published in the *J.C.S.* and other journals in conjunction with C. E. Wood and E. A. Cooper, respectively. (*Signed by*) E. L. Hirst, E. A. Cooper, C. E. Wood.

RAPER, ALAN RICHARDSON, Mond Nickel Co., Ltd., Bashley Road, N.W. 10. British. Research Chemist. M.A., Cambridge University. "Investigation on Equilibrium Diagram of the Copper–Tin Alloys," published in *J. Inst. Metals*, 1927, **2**, 217. "Chemical and Electrochemical Research on Platinum Metals," not published. (*Signed by*) H. McCombie, J. B. Whitworth, J. Dexter.

ROBINSON, THOMAS CROSS, 85, Hillview Gardens, Hendon, N.W. 4. British. Registered Pharmacist. Student at Accrington Grammar and Tech. Schools, fourth and fifth years' Chemical Trades Courses, Organic, Inorganic, and Physical Chemistry. Blackburn Technical College, Advanced Chemistry, Physics, and Botany. Manchester College of Pharmacy, 1921–1922. At present engaged in control of chemical and galenical manufacture. (*Signed by*) Arthur Mortimer, J. Stuart Hills, F. W. Gamble.

SHEPHERDSON, ARNOLD, 19, Dawlish Road, Chorlton-cum-Hardy, Manchester. British. Assistant Research Manager in Imperial Chemical Industries, Ltd. (Dyestuffs Group). B.Sc. (Leeds). Seventeen years' experience in industrial research work. (*Signed by*) E. H. Rodd, P. Chorley, R. Brightman.

THOMSON, GEORGE, 114, Forrest Street, Airdrie, Lanarkshire. British. Assistant in Physical Chemistry, Glasgow University. B.Sc. (Glasgow); Ph.D. (Glasgow). Temporary Assistant in Organic Chemistry, 1926–1929. Assistant in Physical Chemistry since 1929. *J.C.S.*, 1929, 1895. (*Signed by*) G. G. Henderson, R. Wright, T. S. Stevens.

TSUDA, KYOSUKE, Pharmaceutical Institute, Tokyo Imperial University, Tokyo, Japan. Japanese. Assistant of Pharmaceutical Inst., Tokyo Imperial University. Dr. of Pharmacy (Tokyo Imperial University). (*Signed by*) Yasuhiko Asahina, Heisaburo Kondo, Shigehiko Sugasawa.

VINCENT, HERBERT CUBITT GOSTLING, 54, Owlstone Road, Cambridge, England. British. Geologist, at present Research Student in Organic Chemistry, Cambridge University. B.A., Hons. (Cantab); M.A. (Cantab.); F.G.S. 1st Class Hons. Nat. Sci. Trip., Pt. 1, 1921. Wilshire University Prize. 1st Class Hons. Nat. Sci. Trip., Pt. 2, 1923. Director of Science Studies, Fitz House, 1923–1924. Research in geochemistry. Demonstrating in Dept. of Mineralogy, Cambridge, 1923–1924. (*Signed by*) W. J. Pope, W. H. Mills, A. Hutchinson.

Forms of Recommendation for Fellowship recommended by the Council for presentation to ballot under Bye-Law I (2):—

MUSANTE, AUGUSTINE FRANCIS STEPHEN, Rose Tree Road, Media, Pennsylvania, U.S.A. (Business address: Sun Oil Company Research Laboratory, Norwood, Pennsylvania, U.S.A.). American. Research Chemist. A.B., M.A., Swarthmore College, Swarthmore, Pennsylvania. Research investigations in hydrocarbons. (*Signed by*) Gellert Alleman, P. T. Sharples.

SHEPARD, NORMAN ARTHUR, 154, Casterton Avenue, Akron, Ohio, U.S.A. United States citizen. Director of Chemical Research, Firestone Tire & Rubber Company, Akron, Ohio. Ph.B. (Yale); Ph.D. (Yale), 1913. Instructor in Chemistry, Yale, 1913–1917. Assistant Professor, Yale, 1917–1919. Director of Chemical Research, Firestone Tire & Rubber Company, 1919–to date. (*Signed by*) Marston T. Bogert.

VAUGHN, THOMAS HUNT, University of Notre Dame, Box 130, Notre Dame, Indiana, U.S.A. American. Graduate Student in Chemistry. B.S., University of Notre Dame. Joint author of following papers: "A Comparison of Halogeno- and Oxy-acids," *Proc. Ind. Acad. Sci.*, 1929, **39**, 153–54; "Determination of Organic Halogen by the Liquid Ammonia–Sodium Method," *Ind. and Eng. Chem.*, Anal. Ed., **3**, 274 (1931); "The Reaction of Boron Fluoride with Alcohols and Glycols," *Proc. Ind. Acad. Sci.*, 1930, **40**, 203; "A Condenser for Low-boiling Substances," *J. Chem. Educ.*, 1931, **7**, 2433. (*Signed by*) F. E. Cislak, Jocelyn Thorpe.

VENKATARAMAN, KRISHNASAMI, [Forman Christian College, Lahore. Indian. Professor of Organic Chemistry. M.A. (Madras); M.Sc.Tech., Ph.D. (Manchester). Publications: "Bixin," *J. Ind. Inst. of Sci.*, 1923; "The Behaviour of Different Starches towards Dyestuffs and Iodine," *J. Soc. Dyers and Col.*, April and Nov. 1926; "Artificial Silk," *J. Ind. Text.*, Feb., March, April, June, July 1929; "Dicinnamoylmethane," *J. Ind. Chem. Soc.*, 1930; *J.C.S.*, 1926, 2344; 1929, 61, 2219; 1931, 1165, 1541, 2376, 2591. (*Signed by*) N. A. Yajnik, S. S. Bhatnagar, Jocelyn Thorpe.

WÖHLER, LOTHAR, Darmstadt, Herdwey 56. Hessen (Deutschland). ordentl. Professor der Chemie an der Technischen Hochschule Darmstadt. Dr. phil. nat. Univers. Heidelberg n-. Vorstand d. chem. Instituts. Viele Anhandlg. über anorgan. n-. physik. Chemie in den Ber. d. d. chem. Ges., *Ztschr. Elektroch., Z. anorg. Chem., Z. physik Chem., Z. f. Kolloidchemie und Beiheften, Z. angew. Chem., Chem. Ztg., Ztschr. f. Schiess. u. Sprengstoffwesen u. a. in den Jahren* 1896 *bis* 1931. *Lehrb f. anorgan. Chemie*, Leipzig, 1913. (*Signed by*) F. G. Donnan.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

EGYPTIAN GOVERNMENT. *Central Narcotics Intelligence Bureau.* Annual report for the year 1930 etc. Cairo 1931+. (*Reference.*)
From the Director.

GAUDIN, A. M. Flotation. New York 1932. pp. xvi + 552. ill. 36*s.* net. (*Recd.* 20/2/32.)
From the Publishers: The McGraw-Hill Publishing Co.

ROSSMAN, JOSEPH. The law of patents for chemists. Washington, D.C. 1932. pp. x + 304. $3.50. (*Recd.* 26/2/32.)
From the Publishers: The Inventors Publishing Co.

SIEMENS-KONZERN. Wissenschaftliche Veröffentlichungen. Vol. VI, part ii, etc. Berlin 1928 +. (*Reference.*)
From the Bureau of Chemical Abstracts.

TOKYO. *Cellulose Institute.* Cellulose industry. Vol. V, etc. Tokyo 1929 +. (*Reference.*) [In Japanese. English abstracts.]
From the Bureau of Chemical Abstracts.

TECHNOLOGY DEPT.

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

ANNIVERSARY DINNER, MARCH 18TH, 1932.

The Anniversary Dinner was held at the Grosvenor Restaurant, Gordon Street, Glasgow, on Friday, March 18th, 1932, at 7.30 p.m. The President, Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., was in the Chair, the number present being 186. Among the guests were Lord Weir of Eastwood, Sir Thomas Kelly (Lord Provost of Glasgow), Principal Sir Thomas Holland (Edinburgh University), Principal Sir James Irvine (St. Andrews University), Principal Robert S. Rait (Glasgow University), Dr. E. F. Armstrong (Chairman of Council, The Association of British Chemical Manufacturers), Sir Robert Bruce, Mr. W. A. S. Calder (Past-President, Institution of Chemical Engineers), Dr. G. C. Clayton (President, Institute of Chemistry), Mr. Hugh C. Cree (President, Glasgow Chamber of Commerce), Mrs. McCready, and Professor G. T. Morgan (President, Society of Chemical Industry).

The following Toasts were proposed:

1. The King.

2. The Queen, the Prince of Wales, and the other Members of the Royal Family.

By the Right Honourable LORD WEIR, D.L., LL.D.:

3. "The Chemical Society," coupled with the name of the President.

By Professor H. E. ARMSTRONG, LL.D., D.Sc., F.R.S., Past-President:

4. "The Lord Provost and the Corporation of the City of Glasgow," coupled with the name of Sir THOMAS KELLY.

By Sir WILLIAM J. POPE, K.B.E., D.Sc., F.R.S., Past-President:

5. "The University of Glasgow," coupled with the name of Principal R. S. RAIT, C.B.E., D.L., LL.D.

By Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President:

6. "The Guests," coupled with the name of Principal SIR THOMAS HOLLAND, K.C.S.I., K.C.I.E., F.R.S.

Ordinary Scientific Meeting, Thursday, April 21st, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on April 4th, 1932, of Professor Dr. Wilhelm Ostwald, Honorary Fellow, and of the following Fellows :

	Elected.	Died.
Thomas Aspinall	June 20th, 1903.	Jan. 29th, 1932.
Arthur Edward Barclay	Dec. 2nd, 1880.	April 7th, 1932.
Harold William Bausor	Dec. 4th, 1919.	Jan. 29th, 1932.
Thomas Bolas	Mar. 18th, 1869.	Mar. 1st, 1932.
Francis Vernon Darbishire	Feb. 18th, 1892.	Mar. 15th, 1932.
Henry Chapman Jones	May 4th, 1876.	Mar. 7th, 1932.
John Edmund Legg	May 16th, 1889.	Mar. 7th, 1932.
Ernest Whitworth Rowley	Feb. 17th, 1921.	Feb. 6th, 1932.
Charles Spackman	Dec. 15th, 1892.	Mar. 11th, 1932.
Alfred Collett Young	Feb. 5th, 1885.	April 6th, 1932.

The PRESIDENT stated that the Council had received that afternoon a presentation copy of the Perkin Memorial Volume (bound in morocco) from the Authors, to whom the Council had conveyed its thanks for the valuable gift. He further stated that the thanks of the Council had also been conveyed to Mr. André Bracher and to Mr. Conrad W. Lockyer for presenting volumes of the publications of the Society.

Messrs. Charles de Worms and Michael Waloff were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Janet Catherine Bell, B.A., Eskdale, Hillfoot Road, Woolton, Liverpool.
Thomas Robert Bolam, D.Sc., 126, Blackford Avenue, Edinburgh.
Bernard Cavenagh, M.A., D.Sc., F.I.C., 311, St. Kilda Street, Brighton, S. 5, Melbourne, Australia.
Alec Bramley Densham, B.A., 47, St. George's Square, S.W.1.
Reginald Haydn Hopkins, D.Sc., F.I.C., The University, Edgbaston, Birmingham.
Frederick Oliver Howitt, M.Sc., A.I.C., 68, Seymour Road, West Bridgford, Nottingham.
Alexander Lawson, Ph.D., Chemistry Department, University College, Southampton.
Guy Frederic Marrian, D.Sc., 65, Fitzjohn's Avenue, N.W. 3.
John Henry Martin, B.Sc., A.R.C.S., 29, Ormeley Road, Balham, S.W. 12.
Manmatha Nath Niyogi, M.Sc., 8, Duke Street, E.C. 3.
Charles Ockrent, Ph.D., 4, Buccleuch Terrace, Edinburgh.
Derek Richter, B.A., B.Sc., D.Phil, 11, Frenchay Road, Oxford.
Reginald John Rosser, B.Sc., D.Phil., Endellion, Wilkins Road, Cowley, Oxford.

James Sandilands, F.I.C., 102, Westholmes Gardens, Musselburgh.
Robert Henry Slater, Ph.D., 4, Kingsburgh Road, Murrayfield, Edinburgh.
Henry William Thompson, Ph.D., 23, Beech Croft Road, Oxford.
Alfred Thomas Ward, M.Sc., 9, Regent Place, Rugby.
Foster Neville Woodward, B.Sc., 20, Staplands Road, Broad Green, Liverpool.

A Form of Recommendation for Fellowship has been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

August Anton Kunzenbacher, M.A., 59, Leslie Place, Irvington, N.J., U.S.A.

The following papers were read :

"A new reaction of certain diazosulphonates derived from β-naphthol-1-sulphonic acid. Part X. Preparation of phthalazine derivatives from 4-aminoazobenzene and 4'-nitro-4-aminoazobenzene." By F. M. Rowe and F. S. Tomlinson.

"The equilibria between mixtures of carbon monoxide and carbon dioxide at various pressures in contact with steels of different carbon concentrations at temperatures ranging from 750° to 1150°." By A. Bramley and H. D. Lord.

"Some notes on the iron–carbon equilibrium diagram." By A. Bramley.

"*Cannabis indica* resin. Part III. The constitution of cannabinol." By R. S. Cahn.

The following paper was taken as read :

"The parachor and chemical constitution. Part XVIII. Additive compounds of boron trifluoride." By S. Sugden and M. Waloff.

Ordinary Scientific Meeting, Thursday, May 19th, 1932, at 8 p.m.

The Discussion on

"SOME ASPECTS OF ASYMMETRIC SYNTHESIS"

to be opened by Professor A. McKenzie, F.R.S., will be based on the following papers which have appeared in the *Biochemische Zeitschrift* :

1. "Asymmetric induction. Part I. Asymmetric synthesis and induction."
   A. McKenzie and (Miss) A. G. Mitchell (1929, **208**, p. 456).
2. "Asymmetric synthesis. Part II. Influence of solvent on the optical activity of the menthyl and bornyl esters by α-keto-acids."
   A. McKenzie and (Miss) A. G. Mitchell (1929, **208**, p. 271).
3. "The existence of optically active cinnamic acid."
   A. McKenzie and (Miss) A. G. Mitchell (1930, **221**, p. 1).

4. "The mutarotation of optically active esters of *a*-keto-acids."
A. McKENZIE and (Miss) A. G. MITCHELL (1930, **224**, p. 242).
5. "Asymmetric syntheses. Part IX. Preparation of optically active substituted glycollic acids from *l*-menthyl and *l*-bornyl-*a*-naphthoylformates."
A. McKENZIE and P. D. RITCHIE (1931, **231**, p. 412).
6. "Asymmetric syntheses. Part X. Optically active substituted glycollic acids."
A. McKENZIE and P. D. RITCHIE (1931, **237**, p. 1).

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Wednesday, June 1st, 1932. Applications from Fellows will receive prior consideration.

All persons who received grants in June 1931, or in June of any previous year, whose accounts have not been declared closed by the Council are reminded that reports must be returned by June 1st.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income arising from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

GENERAL DISCUSSION ON COLLOID SCIENCE APPLIED TO BIOLOGY.

In future the General Discussion on Colloid Science Applied to Biology published by the Faraday Society will be obtainable by Fellows of the Chemical Society at the special price of 8*s*. 4*d*. (postage 5*d*. extra). Application should be made to Messrs. Gurney & Jackson, 33, Paternoster Row, E.C. 4.

List of Papers, or Abstracts thereof, received between March 10th and April 21st, 1932. (This List does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Conversion of hydroaromatic into aromatic compounds. Part V. The influence of the 2-methyl-group in 2-methyl-5-phenyldihydroresorcinol." By L. E. HINKEL and J. F. J. DIPPY.

"The preparation, relationships, and structures of a number of phosphates of bivalent metals. By H. BASSETT and W. L. BEDWELL.

"Fortuitous empirical relationships in chemical kinetics." By D. T. LEWIS and L. J. HUDLESTON.

"Polycyclic aromatic hydrocarbons. Part X. 1 : 2 : 7 : 8-Dibenzanthracene." By J. W. COOK.

"The constituents of guaiacum resin. Part I. Synthesis of pyroguaiacin methyl ether." By R. D. HAWORTH and C. R. MAVIN.

"Exponential analysis applied to the asymmetric hydrolysis of some β-glucosides with emulsin." By S. MITCHELL and I. MACARTHUR.

"A synthesis of diphenyl." By I. R. SHERWOOD and W. F. SHORT.

"The conductivity of electrolytes in ethyl cyanoacetate and *o*-toluonitrile." By J. C. PHILIP and P. RANGARAMANUJAM.

"Studies in solvent action. Part III. Rotatory powers of *l*-menthyl methyl naphthalate in mixtures of alcohols with benzene or hexane." By H. G. RULE and A. MCLEAN.

"Studies in solvent action. Part IV. Optical rotation of *l*-menthyl hydrogen naphthalate in polar and non-polar solvents." By H. G. RULE and A. MCLEAN.

"Thermionic emission during the catalytic combination of carbonic oxide–oxygen mixtures on a platinum surface." By B. W. BRADFORD.

"A solid polybromide of potassium." By I. W. H. HARRIS.

"The measurement of electron displacements. Part I. The quantitative determination of inductive and electromeric effects." By F. R. GOSS.

"The orienting influence of free and bound ionic charges on attached simple or conjugated unsaturated systems. Part IV. Nitration of some phenyl alkyl sulphones." By W. A. BALDWIN and R. ROBINSON.

"Pyridine arsenicals." By N. P. MCCLELAND and R. H. WILSON.

"The structure of the *iso*cyanides. Part II." By R. G. A. NEW and L. E. SUTTON.

"The system cupric selenate–water–selenic acid at 25°." By G. B. MACALPINE and L. A. SAYCE.

"Nitrous acid as a nitrating agent. Part II. The nitration of dimethyl-*p*-anisidine." By H. H. HODGSON and J. H. CROOK.

"An automatic apparatus for the quantitative removal of ferric chloride from aqueous solution." By A. M. WARD.

"Some *o*-benzenesulphonyl fluoride derivatives." By W. DAVIES and J. H. DICK.

"The structure of para-red and related dyes." By F. A. MASON.

"The thermal combination of ethylene and bromine at glass surfaces. Part I. General kinetics of the reaction at 16°." By G. WILLIAMS.

"The thermal combination of ethylene and bromine at glass surfaces. Part II. The influence of water." By G. WILLIAMS.

"Primary photochemical processes. Part I. The decomposition of formaldehyde." By R. G. W. NORRISH and F. W. KIRKBRIDE.

"The interaction of phenylmagnesium bromide with *N*-chloropiperidine and other *N*-chloro-compounds." By R. J. W. LE FÈVRE.

"Alternative electrode reactions. Part I. Reactions at a platinum cathode in nitric acid solutions." By H. J. T. ELLINGHAM.

"The mobility of groups containing sulphur." By D. T. GIBSON.

"Synthetical studies in the decalin series. Part I." By G. R. CLEMO and J. ORMSTON.

"Studies on 2-substituted dihydroresorcinols. Part II. The direct introduction of the 2-methyl group." By L. E. HINKEL, E. E. AYLING, and G. HOPKINS.

"The system potassium carbonate–ammonia–water." By M. P. APPLEBEY and (MISS) M. A. LEISHMAN.

"The system zinc sulphate–ammonia–water." By M. P. APPLEBEY and M. E. D. WINDRIDGE.

"Studies in complex salts. Part V. The effect of di*iso*propyl substitution on the stability of the dimalonatocupriate ion." By D. J. G. IVES and H. L. RILEY.

"Substitution reactions in polycyclic systems. Part I. The nitration of 4-methyldiphenyl." By W. S. M. GRIEVE and D. H. HEY.

"Aminobenzthiazoles. Part XIII. Corrected data for the 2-alkylamino-β-naphthathiazole series." By G. M. DYSON, R. F. HUNTER, and R. W. MORRIS.

"The compounds of lithium chloride with cobalt chloride. Water as a linking agent in polynuclear kations." By H. BASSETT and (MISS) I. SANDERSON.

"Studies in gaseous adsorption. Part III. The thermal activation effect in the adsorption of hydrogen on platinum and nickel." By E. B. MAXTED and N. HASSID.

"The rearrangement of hydroxy-sulphones. Part III." By A. A. LEVI and S. SMILES.

"The system nitrobenzene–sulphuric acid–water." By C. W. GIBBY.

"Studies in the sterol group. Part XII. The oxidation of α-ergostenol and its derivatives." By I. M. HEILBRON, J. C. E. SIMPSON, and D. G. WILKINSON.

"Studies in the sterol group. Part XIII. Hydrocarbons of the ergosterol series." By I. M. HEILBRON, F. S. SPRING, and E. T. WEBSTER.

"Studies in the sterol group. Part XIV. β-Ergostenol and its derivatives." By I. M. HEILBRON and D. G. WILKINSON.

"Studies in the sterol group. Part XV. The relationship between α- and β-ergostenol and their derived hydrocarbons." By A. L. MORRISON and J. C. E. SIMPSON.

"Quinoline compounds containing arsenic. Part IV. Synthesis of derivatives of quinoline-5- and quinoline-8-arsonic acids." By R. H. SLATER.

"Lichen acids. Part III. The constitution of barbatic acid and the syntheses of *iso*rhizonic acid and methyl barbatate." By A. ROBERTSON and R. J. STEPHENSON.

"Arsonic acids of the fluorenone series. Derivatives of amino-fluorenone-2-arsonic acid." By G. T. MORGAN and (MISS) J. STEWART.

"Compounds of copper with mercury." By A. S. RUSSELL and J. HOWITT.

"The nature of active charcoal. Part I. The adsorption isotherms of organic acids in aqueous solution with ash-free charcoals." By C. OCKRENT.

"Dynamic isomerism involving mobile hydrocarbon radicals. Part IV. The rearrangement of 3 : 5-dichloro-substituted triphenylbenzenylamidines." By A. W. CHAPMAN and C. H. PERROTT.

"A ring closure reaction in the triarylamidine series. A new source of disecondary *ortho*-diamines." By A. W. CHAPMAN and C. H. PERROTT.

"Co-ordination compounds of boron trifluoride and organic esters." By G. T. MORGAN and R. TAYLOR.

"Estimation of the sulphate ion by precipitation as barium sulphate." By J. A. N. FRIEND and W. N. WHEAT.

"The selenates of lanthanum and their solubilities in water." By J. A. N. FRIEND.

"The partial esterification of polyhydric alcohols. Part XII. The function of ethylene oxide rings." By A. FAIRBOURNE, G. P. GIBSON, and D. W. STEPHENS.

"The partial esterification of polyhydric alcohols. Part XIII. Glycerol α-monophenyl ether." By A. FAIRBOURNE and D. W. STEPHENS.

"The partial esterification of polyhydric alcohols. Part XIV. The iodohydrins." By A. FAIRBOURNE and D. W. STEPHENS.

"Flame speeds during the inflammation of moist carbonic oxide–oxygen mixtures." By W. PAYMAN and R. V. WHEELER.

"Degradation of quaternary ammonium salts. Part VI. Effect of substitution on velocity of intramolecular rearrangement." By J. L. DUNN and T. S. STEVENS.

"Degradation of quaternary ammonium salts. Part VII. New cases of radical migration." By T. THOMSON and T. S. STEVENS.

"Syntheses of alkylphenanthrenes. Part II. Pimanthrene and 1 : 4 : 7-trimethylphenanthrene." By R. D. HAWORTH, B. M. LETSKY, and C. R. MAVIN.

"Syntheses of alkylphenanthrenes. Part III. Retene and 1 : 4-dimethyl-7-*iso*propylphenanthrene." By R. D. HAWORTH, B. M. LETSKY, and C. R. MAVIN.

"Hydroxy-carbonyl compounds. Part VII. Coumarins and 1 : 4-benzopyrones derived from *m*-cresol." By A. ROBERTSON, R. B. WATERS, and (in part) E. T. JONES.

"Hydroxy-carbonyl compounds. Part VIII. Some derivatives of 2 : 6-dihydroxytoluene." By E. T. JONES and A. ROBERTSON.

"Properties of conjugated compounds. Part XVIII. Addition of hypochlorous acid to sorbic acid." By G. F. BLOOMFIELD and E. H. FARMER.

"Reactions of olefinic compounds. Part I. Additivity of olefinic acids towards hypochlorous acid and ethyl hypochlorite: orientation in relation to additive mechanism." By G. F. BLOOMFIELD and E. H. FARMER.

"The condensation of the esters of $\alpha\alpha'$-dibromodicarboxylic acids with thiocarbamides and the synthesis of dithiazolylmethane derivatives." By R. G. ATKINSON and R. F. HUNTER.

"The quantitative nitration of *p*-chloro- and *p*-bromo-toluene." By (MISS) F. R. SHAW and E. E. TURNER.

"The stereochemistry of 2 : 2′-disubstituted diphenyls. Part I. The optical resolution of phenyl benzidine-2 : 2′-disulphonate." By (MISS) M. S. LESSLIE and E. E. TURNER.

"Studies in the mechanism of flame movement. Part I. The uniform movement of flame in mixtures of methane and air, in relation to tube-diameter." By H. F. COWARD and F. J. HARTWELL.

"The alkaloids of ergot. Part IV. A complex group common to ergotoxine and ergotamine." By S. SMITH and G. M. TIMMIS.

"The supposed isomerism among the pallado-diammines." By H. D. K. DREW, F. W. PINKARD, W. WARDLAW and G. H. PRESTON.

"Physico-chemical studies of complex formation involving weak acids. Part V. Soluble basic thorium tartrate complexes." By H. T. S. BRITTON and W. E. BATTRICK.

"Heats of formation of the hydrates of manganous oxalate." By M. L. SMITH and B. TOPLEY.

"Studies in the chemistry of creatine and creatinine. Part I. Acyl derivatives of creatinine." By H. R. ING. "With notes on their electrometric titration." By R. A. KEKWICK and G. M. RICHARDSON.

"The rearrangement of the alkylanilines. Part V. Trimethylethylene, the intermediate product in the rearrangement of *iso*amylaniline hydrobromide to *p*-amino-*tert.*-amylbenzene hydrobromide." By W. J. HICKINBOTTOM.

"Methoxy-derivatives of xanthone and thioxanthone." By K. C. ROBERTS, L. A. WILES, and B. A. S. KENT.

"Synthetical experiments in the *iso*flavone group. Part VI. The reactions of some keto-ethylene oxides." By W. BAKER and R. ROBINSON.

"Organic antimonial compounds. Part III." By (MISS) M. E. BRINNAND, W. J. C. DYKE, W. H. JONES, and W. J. JONES.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BILLITER, JEAN. Technische Elektrochemie. 2nd edition. Vol. III. Schmelzfluss-Elektrolyse. Halle (Saale) 1932. pp. viii + 196. ill. *M.* 12.50. (*Recd.* 12/4/32.)

From the Publisher: Herr Wilhelm Knapp.

FOWLES, GEORGE. Volumetric analysis. London 1932. pp. xii + 202. ill. 6*s.* net. (*Recd.* 8/4/32.)

From the Publishers: Messrs. G. Bell & Sons.

WEST, CLARENCE JAY, and BEROLZHEIMER, D. D. Bibliography of bibliographies on chemistry and chemical technology. Second supplement 1929—31. (Bulletin of the National Research Council, No. 86.) Washington 1932. pp. 150. (*Reference.*) $1.50.

From the National Research Council.

WHYTLAW-GRAY, ROBERT, and PATTERSON, HUBERT SUTTON. Smoke: a study of aerial disperse systems. London 1932. pp. viii + 192. ill. 14*s.* net. (*Recd.* 31/3/32.)

From Mr. E. Hatschek.

II. *By Purchase.*

ARCHIBALD, EBENEZER HENRY. The preparation of pure inorganic substances. New York 1932. pp. x + 383. ill. $3.75 net. (*Recd.* 21/4/32.)

BURN, JOSHUA HAROLD. Recent advances in materia medica: being a description of the methods of preparing and testing sera and

vaccines, hormones and vitamins, with an account of their properties and medicinal uses. London 1932. pp. x + 224. ill. 12*s.* 6*d.* net. (*Recd.* 18/2/32.)

DUTCHER, R. ADAMS, and HALEY, DENNIS E. Introduction to agricultural biochemistry. New York 1932. pp. x + 484. ill. $4.50 net. (*Recd.* 21/4/32.)

EWALD, PETER PAUL, and HERMANN, CARL. Strukturbericht 1913–1928. Leipzig 1931. pp. vi + 818. ill. (*Reference.*) *M.* 47.

HAWK, PHILIP BOUVIER, and BERGEIM, OLAF. Practical physiological chemistry. 10th edition. [Philadelphia] 1931. pp. xviii + 930. ill. $6.50 net. (*Recd.* 21/4/32.)

HIMUS, GODFREY WILFRED. Fuel testing: laboratory methods in fuel technology. London (1932). pp. x + 257. ill. 15*s.* net. (*Recd.* 21/4/32.)

HOUGEN, O. A., and WATSON, K. M. Industrial chemical calculations: the application of physico-chemical principles and data to problems of industry. New York 1931. pp. viii + 502. ill. $4.50 net. (*Recd.* 18/2/32.)

HUGHES, ARTHUR LLEWELYN, and DUBRIDGE, LEE ALVIN. Photoelectric phenomena. New York 1932. pp. xii + 532. ill. $5 net. (*Recd.* 21/4/32.)

KOLTHOFF, ISAAK MAURITS, and FURMAN, N. HOWELL. Potentiometric titrations. 2nd edition. New York 1931. pp. xiv + 482. ill. $6 net. (*Recd.* 18/2/32.)

MINISTRY OF AGRICULTURE AND FISHERIES. Bulletin No. 28. Artificial fertilizers in modern agriculture. By SIR EDWARD JOHN RUSSELL. London 1931. pp. viii + 202. ill. 3*s.* net. (*Recd.* 24/2/32.)

MONYPENNY, JOHN HENRY GILL. Stainless iron and steel. 2nd edition. London 1931. pp. x + 576. ill. 25*s.* net. (*Recd.* 22/2/32.)

MUNBY, ALAN E. Laboratories, their planning and fittings. 2nd edition. London 1931. pp. xx + 224. ill. 30*s.* net. (*Recd.* 18/2/32.)

NEWMAN, FRANK HERBERT. Recent advances in physics (non-atomic). London 1932. pp. x + 378. ill. 15*s.* net. (*Recd.* 21/4/32.)

OHLMÜLLER, WILHELM, and SPITTA, OSCAR. Untersuchung und Beurteilung des Wassers und des Abwassers. 5th edition. By WOLFGANG OLSZEWSKI and O. SPITTA. Berlin 1931. pp. xii + 566 + 7 plates. *M.* 49.60. (*Recd.* 9/3/32.)

PARLIAMENTARY REPORTS. Final report on the third census of production of the United Kingdom (1924). The chemical and allied trades [etc.]. London 1931. pp. xvi + 468. (*Reference.*) 7*s.* net.

RUSSELL, SIR EDWARD JOHN. Soil conditions and plant growth. 6th edition. London 1932. pp. viii + 636. ill. 21*s.* net. (*Recd.* 22/2/32.)

SIEGBAHN, MANNE. Spektroskopie der Röntgenstrahlen. 2nd edition. Berlin 1931. pp. vi + 576. ill. *M.* 49.60. (*Recd.* 9/3/32.)

SOMMERFELD, ARNOLD. Atombau und Spektrallinien. 5th edition. Vol. I. Braunschweig 1931. pp. viii + 736. ill. *M.* 31.60. (*Recd.* 1/4/32.)

WEIDENHAGEN, RUDOLF. Chemische Konstitution und enzymatische Hydrolyse der Kohlehydrate. (Sammlung, N.F. Heft 12.) Stuttgart 1932. pp. 35. (*Reference.*)

WEIZEL, WALTER. Bandenspektren. Leipzig 1931. pp. xiv + 461. ill. *M.* 45. (*Recd.* 9/3/32.)

WILSON, JOHN ARTHUR, and MERRILL, HENRY BALDWIN. Analysis of leather and materials used in making it. New York 1931. pp. xii + 512. ill. $7.00 net. (*Recd.* 18/2/32.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 55. The basal (standard) metabolism of the Australian merino sheep. By E. W. LINES and A. W. PEIRCE. Melbourne 1931. pp. 34. ill.

—— —— Pamphlet No. 23. Refrigeration applied to the preservation and transport of Australian foodstuffs. A survey and a scheme for research. By J. R. VICKERY. Melbourne 1931. pp. 40.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Chemistry and the community. By SIR FRANK EDWARD SMITH. 3rd S. M. Gluckstein Memorial Lecture, 1931. London 1932. pp. 22.

JOHNSON, ROWLAND NICHOLAS. Artificial stones used for dental models. (From the *Brit. Dental J.*, 1931, **52**.) ill.

KAWAMURA, JIPPEI. Über einen neuen Bestandteil des Tsuga-Harzes. (From the *Bull. Imp. Forestry Exper. Stat.*, 1931.) [In Japanese. English summary.]

MCDOWALL, FREDERICK HENRY. Estimation of moisture in cheese. (From the *N.Z. J. Sci. Tech.*, 1930, **11**.)

—— Temperature-change in cheese and butter. (From the *N.Z. J. Sci. Tech.*, 1931, **12**.)

MURPHY, D. W., and JOMINY, W. E. The influence of atmosphere and temperature on the behaviour of steel in forging furnaces. (*Univ. Michigan Engineering Research Bulletin*, 1931, No. 21.) pp. vi + 150. ill.

NEW ZEALAND. *Department of Scientific and Industrial Research.* Bulletin No. 21. Standardized cheese, and cheese analysis. By FREDERICK HENRY MCDOWALL. Wellington 1930. pp. 19. ill.

—— —— Treatment and disposal of dairy waste waters. By FREDERICK HENRY MCDOWALL. Wellington 1931. pp. 36.

OPSTALL, HENDRIK JOHANNES VAN. Reactiesnelheden van 1-chloor-2-4-dinitrobenzol en -naphthaline met aromatische aminen. Leiden 1932. pp. xvi + 141.

PERLITZ, HARALD. Abstandsänderungen nächster Nachbaratome in einigen Elementen und Legierungen bei Umordnung aus der kubischen flächenzentrierten Anordnung in die kubische raumzentrierte oder die hexagonale dichteste Anordnung. (From the *Acta Comm. Univ. Tartu.*, 1931, *A* **22**.) ill.

SCHLÄPFER, PAUL. Ueber die Verbrennung von Koks in Zentralheizungen. (From the *Monats.-Bull. Schweiz. Ver. Gas-Wasserfach.*, 1930.) ill.

—— Verkokungsmechanismus und Verkokungstechnik. (From the *Monats-Bull. Schweiz. Ver. Gas-Wasserfach.*, 1931.)

SCHLÄPFER, PAUL, and MÜLLER, E. Studien über den Bläh- und Backvorgang bei der thermischen Behandlung von Steinkohlen. (*Eidgen. Materialprüf. E.T.H., Zurich, Ber.*, **55**, 1931.) pp. 47. ill.

SCHMITT, N. Rotenon, ein aussichtsreiches, für Warmblüter ungefährliches Insecticid. (From *Wein und Rebe*, 1931, **13**.)

SCHWARTZE, E. W. [and others]. The effect of pasteurization upon the vitamin-C content of milk in the presence of certain metals. (From the *J. Nutrition*, 1931, **4**.) ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research.* Special Report No. 18. The weathering of natural building stones. By ROBERT JOHN SCHAFFER. London 1932. pp. x + 149. ill.

—— *Engineering Research.* Special Report No. 17. The strength at high temperatures of a cast and a forged steel as used for turbine construction. By H. J. TAPSELL and A. E. JOHNSON. London 1931. pp. iv + 33. ill.

—— *Fuel Research.* Physical and chemical survey of the national coal resources. No. 21. The Northumberland and Durham coalfield. Northumberland area. The Yard seam. London 1931. pp. vi + 54. ill.

SULLIVAN, MICHAEL XAVIER, HESS, W. C., and SEBRELL, W. H. Studies on the biochemistry of sulphur. XI. (From the *U.S. Public Health Reports*, 1931, **46**.)

THERIAULT, EMERY J., and MCNAMER, PAUL D. Experimental studies of natural purification in polluted waters. VI. Rate of disappearance of oxygen in sludge. (From the *U.S. Public Health Reports*, 1931, **46**.)

TECHNOLOGY DEPT.

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 5th, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN announced that the following Committees for 1932—1933 had been appointed by the Council:

Finance Committee: F. P. Dunn, G. T. Moody, J. C. Philip, R. H. Pickard, F. L. Pyman, W. Rintoul, Sir Robert Robertson, J. F. Thorpe, and the Officers (Treasurer as Chairman), with the Assistant Secretary as Secretary.

House Committee: A. J. Allmand, H. McCombie, Sir William J. Pope, Sir Robert Robertson, R. Robinson, J. F. Thorpe, and the Officers, with the Assistant Secretary as Secretary.

Library Committee: T. A. Henry (Chairman), C. R. Bailey, J. J. Fox, C. K. Ingold, W. H. Mills, S. W. Smith, H. Terrey, J. C. Withers, and the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

Publication Committee: J. C. Philip (Chairman), H. E. Armstrong, G. M. Bennett, H. V. A. Briscoe, H. M. Dawson, H. W. Dudley, F. P. Dunn, A. C. G. Egerton, J. J. Fox, W. E. Garner, W. N. Haworth, I. M. Heilbron, J. T. Hewitt, C. N. Hinshelwood, J. Kenner, J. Kenyon, H. King, T. M. Lowry, W. H. Mills, J. R. Partington, E. K. Rideal, R. Robinson, F. M. Rowe, J. L. Simonsen, S. Smiles, S. Sugden, J. F. Thorpe, and the Officers, with the Editor as Secretary.

Research Fund Committee: J. E. Coates, W. N. Haworth, I. M. Heilbron, C. K. Ingold, J. Kendall, A. Lapworth, T. M. Lowry, G. T. Morgan, J. R. Partington, R. Robinson, and the Officers, with the Assistant Secretary as Secretary.

Mr. C. G. B. Hose was formally admitted a Fellow of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Henry William Blair, Grove Place, Juniper Green, Edinburgh.
Gihei Hamaguchi, Yamasa, Chōshi, Chiba-ken, Japan.
Arthur Jones, M.Sc., 17, Circle Gardens, Merton Park, S.W. 19.
Alexander King, M.Sc., A.R.C.S., Dumbreck, Royston Park Road, Hatch End, Middlesex.

James Dalrymple Loudon, B.Sc., 8, Ralston Street, Airdrie, Lanarkshire.
Kenneth Angus Murray, B.Sc., 63, Montagu Street, Boksburg, Transvaal.
Francis Leslie Rose, B.Sc., 13, Arundel Street, Nottingham.
William Livingston Ruigh, Ph.D., 22, Seminary Avenue, Rahway, New Jersey, U.S.A.
James William Starkey, B.Sc., 350, Crookesmoor Road, Sheffield.

Mrs. E. H. Farmer and Dr. R. P. Linstead were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared duly elected.

Clarence Halse Cliff.
Donald Russell Duncan, B.Sc., Ph.D.
Ivan Walter Henry Harris, B.Sc., A.R.C.S.
Eric Higgins, Ph.D.
Harold Clifford Higinbotham.
Walter Horridge, M.C.
Saburo Ishiwata.
Velur Venkitaseshariyer Sivarama Iyer, M.A.
John Butler Day Lewis.
Eluned Leyshon, B.Sc.
Stotherd Mitchell, D.Sc., Ph.D.
Alexander Lang Morrison, B.Sc., D.Phil.
Gourie Kanta Mukherjee, M.Sc.
Augustine Francis Stephen Musante, A.B., M.A.
Sydney Diggary Nicholas, B.A.
Alan Richardson Raper, M.A.
Thomas Cross Robinson.
Norman Arthur Shepard, Ph.D.
Arnold Shepherdson, B.Sc.
George Thomson, B.Sc., Ph.D.
Kyosuke Tsuda.
Thomas Hunt Vaughn, B.S.
Krishnasami Venkataraman, M.A., M.Sc.Tech., Ph.D.
Herbert Cubitt Gostling Vincent, M.A.
Lothar Wöhler, Dr.Phil.

The following papers were read :

"Dynamic isomerism involving mobile hydrocarbon radicals. Part IV. The rearrangement of 3 : 5-dichloro-substituted triphenylbenzenyl amidines." By A. W. CHAPMAN and C. H. PERROTT.

"A ring closure reaction in the triarylamidine series. A new source of disecondary-*ortho*-diamines." By A. W. CHAPMAN and C. H. PERROTT.

"Properties of conjugated compounds. Part XVIII. Addition of hypochlorous acid to sorbic acid." By G. F. BLOOMFIELD and E. H. FARMER.

"Reactions of olefinic compounds. Part I. Additivity of olefinic acids towards hypochlorous acid and ethyl hypochlorite : orientation in relation to additive mechanism." By G. F. BLOOMFIELD and E. H. FARMER.

"The stereochemistry of 2 : 2′-disubstituted diphenyls. Part I. The optical resolution of phenyl benzidine-2 : 2′-disulphonate." By (MISS) M. S. LESSLIE and E. E. TURNER.

"The quantitative nitration of *p*-chloro- and *p*-bromo-toluene." By (MISS) F. R. SHAW and E. E. TURNER.

Ordinary Scientific Meeting, Thursday, May 19th, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Richard Haliburton Adie	Dec. 3rd, 1885.	May 18th, 1932.
John Christmas Chorley	Dec. 3rd, 1891.	May 4th, 1932.

The PRESIDENT announced that the Council, at its meeting that afternoon, had awarded the Longstaff Medal for 1933 jointly to Professor W. N. Haworth, F.R.S., and to Sir James C. Irvine, C.B.E., F.R.S., in recognition of their outstanding work on the chemistry of the sugars. The presentation will be made at the next Annual General Meeting on March 30th, 1933.

Dr. A. S. Gomm was formally admitted a Fellow of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Clarence Jephcott, M.A., Ph.D., 37, Tavistock Square, W.C. 1.
Joseph Kennedy, B.Sc., 39, Polwarth Gardens, Edinburgh.
Austin Raymond Martin, Ph.D., 13, Braemar Place, Aberdeen.
Owen Morris, 72, Chapel Lane, Headingley, Leeds.
Sunil Coomar Mükhopadhyay, B.Sc., 112, Gower Street, W.C. 1.
Augustus Stephens, St. Bartholomew's Hospital, E.C. 1.
Mikio Tsuda, Prof., Ōhyo-kagaku, Kôtô-kôgyo gakko, Ohka-cho, Yokohama, Japan.

The following Forms of Recommendation for Fellowship have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Arrigo Mazzucchelli, Prof., The Royal University, Pisa, Italy.
Donald Kiteley Tressler, A.B., Ph.D., The Birdseye Laboratories, Gloucester, Mass., U.S.A.

An Informal Discussion on "Some Aspects of Asymmetric Synthesis" was opened by Professor A. McKenzie, F.R.S., and continued by Dr. R. H. Pickard, Prof. T. M. Lowry, Dr. J. Kenyon, Dr. N. V. Sidgwick, Dr. G. W. Clough, Dr. H. King, Prof. Dr. Einar Biilmann, and Dr. E. E. Turner.

HARRISON MEMORIAL PRIZE.

In accordance with the Trust Deed governing the Harrison Memorial Fund, the Selection Committee, consisting of the Presidents of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, and the Pharmaceutical Society, will proceed to make an award of the Harrison Prize in December next.

The Prize, of the value of about £150, is to be awarded to the chemist of either sex, being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December, 1932.

Applications, five copies of which must be submitted, should contain the following information:

(*a*) Name (in full).
(*b*) Age (birth certificate to accompany application).
(*c*) Degrees (name of University where obtained).
(*d*) Other qualifications.
(*e*) Experience.
(*f*) Titles of published papers, with authors' names, including full references to publication.
(*g*) Where research was carried out.
(*h*) Testimonials or references.
(*i*) Any other information bearing on the application.

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by

The President,
The Chemical Society,
Burlington House,
Piccadilly,
London, W. 1.,

not later than Thursday, December 1st, 1932.

List of Papers, or Abstracts thereof, received between April 21st and May 19th, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the *Journal*.)

"Ethyl palmitate. Its density, surface tension, parachor, and Eötvös–Ramsay–Shields constant." By C. P. Ellis.

"The rate of chlorination of anilides and phenols as affected by association." By R. E. Roberts and F. G. Soper.

"*cyclo*-1 : 2-Dimercaptoethane-stibinyl derivatives." By R. E. D. Clark.

"Physico-chemical studies of complex formation involving weak acids. Part VI. Solutions of complex cyanides of silver, zinc, cadmium, mercury, and nickel." By H. T. S. Britton and E. N. Dodd.

"The action of ephedrine on benzaldehyde." By W. Davies.

"The action of some metallic oxides on benzotrichloride and benzal chloride." By W. Davies and J. H. Dick.

"The action of chloramine-*T* on disulphides containing the –S–S– linkage." By J. R. Alexander and H. McCombie.

"The equilibrium $Fe''' + I' \rightleftharpoons Fe'' + \frac{1}{2}I_2$ in aqueous solution." By H. M. Dawson and E. Spivey.

"Optical rotatory dispersion in the carbohydrate group. Part I." By T. L. Harris, E. L. Hirst, and C. E. Wood.

'The dissociation constants of organic acids. Part VI. The limiting mobility of the hydroxyl ion at 25°." By G. H. Jeffery and A. I. Vogel.

"*X*-Ray evidence on the structure of the furanose and pyranose forms of α-methylmannoside." By E. G. Cox and T. H. Goodwin.

"Reactions between hexamethylenetetramine and phenolic compounds. Part I. New method for the preparation of 3- and 5-aldehydosalicylic acids." By J. C. Duff and E. J. Bills.

"The mechanism of saponification of phenyl benzoate in ethyl alcohol–water mixtures." By C. W. Gibby and W. A. Waters.

"Quinoline compounds containing arsenic. Part V. Syntheses of 7 : 8-triazolquinoline-5-arsonic acid." By R. H. Slater.

"The crystalline structure of tetrammino-platinous chloride." By E. G. Cox.

"The interaction of acetonephenylhydrazone and phenyl *iso*cyanate." By W. A. Caldwell, J. Chapman, H. W. Goodwin, and F. J. Wilson.

"A general method for the preparation of 1-substituted glyoxalines from acetalylthiocarbimide and primary amines." By A. P. T. Easson and F. L. Pyman.

"Attempts to prepare a compound containing the group and a note on substitution in, and the formula of, nitrosobenzene." By R. J. W. Le Fèvre.

"Three-carbon tautomerism in dicyclic systems. Part I. A comparison between the corresponding compounds of *trans*-β-decalin and *cyclo*hexane." By R. S. Thakur.

"Three-carbon tautomerism in dicyclic systems. Part II. The effect of an α-methyl group on tautomerism in *trans*-β-decalin compounds." By R. S. THAKUR.

"Orientation in the substitution reactions of alkylnaphthalenes. Part I. Side-chain nitration of 1 : 4-dimethylnaphthalene." By R. ROBINSON and H. W. THOMPSON.

"Studies in stereochemical structure. Part IV. Esters of (−) menthol and the (−), (+), and *r*-mandelic acids." By R. ROGER.

"2 : 4-Diamino-1-methylnaphthalene." By H. W. THOMPSON.

"The reduction of silver ions by ferrous ions." By D. ROBERTS and F. G. SOPER.

"The preparation of unsymmetrical diphenyl derivatives." By I. R. SHERWOOD, W. F. SHORT, and R. STANSFIELD.

"The constitution of cellobiose." By G. M'OWAN and (MISS) M. A. ROSS.

"The nature of the catalytic action of hydrochloric acid in the intramolecular change of *N*-chloroacetanilide." By H. M. DAWSON and H. C. MILLET.

"Syntheses of 19-ketophenanthridindocoline, 3-benzoylcarbazole, and 3 : 6-dibenzoylcarbazole." By S. G. P. PLANT and (MISS) M. L. TOMLINSON.

"The structure of glutaconic acids and esters. Part IV. Some cyclic glutaconic derivatives." By G. A. R. KON and H. R. NANJI.

"The structure of glutaconic acids and esters. Part V. 3-Methyl-*cyclo*propene-1 : 2-dicarboxylic acid and its ester." By G. A. R. KON and H. R. NANJI.

"Three-carbon tautomerism in dicyclic systems. Part III. A comparison between the corresponding compounds of *trans*-hexahydrohydrindene (2) and *cyclo*pentane." By R. S. THAKUR.

"Three-carbon tautomerism in dicyclic systems. Part IV. The effect of an α-methyl group on tautomerism in *trans*-hexahydrohydrindene compounds." By R. S. THAKUR.

"Note on β-phenyl ethyl malonic acid." By J. B. COHEN.

"Physico-chemical studies of complex acids. Part VII. Glass electrode titrations of vanadic acid." By H. T. S. BRITTON and R. A. ROBINSON.

"An easily adjusted electrical thermo-regulator." By L. J. HUDLESTON.

"The velocity of ionic reactions in different solvent media." By D. T. LEWIS.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 2nd, 1932.

BELL, JANET CATHERINE, "Eskdale," Hillfoot Road, Woolton, Liverpool. British. Research Student. B.A. (Cantab.). Research student at Oxford University with Professor R. Robinson, F.R.S.; Yarrow Research Studentship. (*Signed by*) Mary Beatrice Thomas, R. G. W. Norrish, Robert Robinson.

BLAIR, HENRY WILLIAM, Grove Place, Juniper Green, Edinburgh. British. Member of Pharmaceutical Society; Chemist. Chief Chemist, Laboratories, Messrs. Pinkerton, Gibson & Co., Ltd., Wholesale Druggists and Manufacturing Chemists, Edinburgh, for past sixteen years. Certificates (Class) in Inorganic and Organic Chem., Physics, Electricity and Magnetism, etc., Heriot-Watt College. Notes on "Opium," 1914; "Aniline Dyes," 1918; "Scotch Chamomiles," Jan. 1920; "New Curriculum," 1920 (Pres. Add. Ed. Chem. Assoc.); "Ph Values of Concentrated Sol. of Ammon. Acet.," 1931 (all in *Pharm. Journal*). (*Signed by*) Eric Knott, J. J. Blackie, W. A. Beattie.

BOLAM, THOMAS ROBERT, 126, Blackford Avenue, Edinburgh. British. University Lecturer. M.Sc. (Bristol), D.Sc. (Edinburgh). Lecturer in the Department of Chemistry of the University of Edinburgh. Publications in *J.C.S.* (1918); *J.S.C.I.* (1921), *Trans. Faraday Soc.* (1926, 1928, 1930), *J. Physical Chem.* (1931), *J.C.S.*, 1918, **113**, 825–832. (*Signed by*) James Kendall, H. Gordon Rule, Ernest B. Ludlam.

CAVANAGH, BERNARD, 311, St. Kilda Street, Brighton, S. 5, Melbourne, Australia. British. University Lecturer. M.A. (Oxford), D.Sc. (London), F.I.C. *Phil. Mag.*, 1922, XLIII, 606; XLIV, 226, 610; *Proc. Roy. Soc.*, **A, 106**, 243; *J.C.S.*, 1927, 2207; 1928, 843, 855; 1930, 1425. (*Signed by*) E. J. Hartung, W. J. Young, A. C. D. Rivett.

DENSHAM, ALEC BRAMLEY, 47, St. George's Square, S.W. 1. British. Chemist in Gas Light & Coke Co. B.A. (1st Class), Oxford, 1930. Research worker on corrosion for the Gas Light & Coke Co. (*Signed by*) J. G. Clark, Frederick C. Smith, J. H. Mead.

HAMAGUCHI, GIHEI, Yamasa, Choshi, Chiba-ken, Japan. Japanese. President of the Yamasa-Shoyu Company. Rigakushi (Tokyo Imp. Univ.). (*Signed by*) Riko Majima, Hiroshi Nomura, Harusoda Suginome.

HOPKINS, REGINALD HAYDN, The University, Edgbaston, Birmingham (39, Woodland Road, Northfield, Birmingham). British. Professor of Brewing and Fermentation. D.Sc. (Birmingham, 1928), F.I.C. (1918). Papers in *Biochem. J.*, 1928, **22**, 1145; 1929, **23**, 1022; 1931, **25**, 245, 256, 829, 1860. Several papers in *Journ. Inst. Brewing*, 1925–31. (*Signed by*) Arthur R. Ling, W. O. Kermack, W. N. Haworth.

HOWITT, FREDERICK OLIVER, 68, Seymour Road, West Bridgford, Nottingham. British. Biochemist, Boots Pure Drug Co., Ltd. B.Sc. (1st Class Hons. in Chem.), M.Sc. (Biochemistry, London), A.I.C. Publications: "Mode of Action of Insulin," *Nature*, May 16, 1931; "Starch Envelopes in Pyrenoids," *Nature*, March 15, 1930. Part author of: "A Study of the Œstrus-producing Hormone," *Biochem. J.*, 1928, **22**, 1526; "Electrophoresis of Protein Sols," *Proc. Roy. Soc.*, 1929, **A, 126**, 126; "Electrophoresis of Protein Sols," *Biochem. J.*, 1931, **25**, 391; "Action of Liver Preparations in Diabetes," *Lancet*, 1931, i, 20; etc. (*Signed by*) Frank Lee Pyman, Joseph Marshall, Arthur Nutter Smith.

JONES, ARTHUR, 17, Circle Gardens, Merton Park, S.W. 19. British. Consulting Chemist. M.Sc., Manchester, Hons. Chemistry. Twenty-three years concerned in Research and Development of Cellulose Lacquers and Finishes chiefly on fabrics and leather and motors. Lecturer in Organic Chemistry, Gt. Yarmouth Science School. Chief Chemist to Grant & Co., Ltd., Gt. Yarmouth, twelve years, and T. and W. Farmiloe, London, three years. (*Signed by*) M. C. Lamb, Percy Edgerton, Edgar Neumann.

KING, ALEXANDER, Dumbreck, Royston Park Road, Hatch End, Middlesex. British. Demonstrator in Chemistry at Royal College of Science. M.Sc. (Lond.), A.R.C.S., D.I.C. (*Signed by*) H. B. Baker, James C. Philip, H. L. Riley.

LAWSON, ALEXANDER, Chemistry Department, University College, Southampton. British. Lecturer in Chemistry. B.Sc. (Glasgow), Ph.D. (Glasgow). At Glasgow in collaboration with T. S. Patterson, published work on the "Optical Rotation of Derivatives of Lactic Acid" (*J.C.S.*, 1929, 2042), and at Munich University, with H. Wieland, work on the "Dehydrogenating Enzymes of Muscle" (*Annalen*, 1931, **495**, 193). Was Assistant in the Med. Chem. Dept. at Edinburgh University. (*Signed by*) D. R. Boyd, G. H. Jeffery, A. E. Clarence Smith.

LOUDON, JAMES DALRYMPLE, 8, Ralston Street, Airdrie, Lanarkshire. British. University Assistant in Chemistry (Glasgow). B.Sc. (Glasgow). Graduated B.Sc. with 1st Class Hons. in Chemistry at Glasgow, 1929; Research Student, 1929–31; appointed University Assistant, 1931. (*Signed by*) G. G. Henderson, T. S. Patterson, S. Horwood Tucker, David T. Gibson.

MARRIAN, GUY FREDERIC, 65, Fitzjohn's Avenue, N.W. 3 (Department of Physiology and Biochemistry, University College, London). British. Lecturer in Biochemistry, University College. B.Sc. Hons. Chem. (London), M.Sc. Physiology (London), D.Sc. Biochemistry (London). Papers on the chemistry of the sex hormones published in *Biochem. J.*, for which the Meldola medal (1932) was awarded by the Institute of Chemistry. Other papers in various journals on different fields in Biochemistry and Physiology. (*Signed by*) J. C. Drummond, H. W. Dudley, H. Raymond Ing.

MARTIN, JOHN HENRY, 29, Ormeley Road, Balham, S.W. 12. English. Research Student. A.R.C.S., B.Sc. (Lond.), 2nd Class Hons. "Potassium Dibromoiodide Hydrate," Cheesman and Martin, *J.C.S.*, 1932, 586. (*Signed by*) H. B. Baker, R. H. Purcell, G. H. Cheesman.

MURRAY, KENNETH ANGUS, 63, Montagu Street, Boksburg, Transvaal, South Africa. British South African. Teacher. B.Sc. (Hons.), University of the Witwatersrand, Johannesburg. Hons. in Physical Chemistry (1st Class). At present a teacher and wish to maintain an interest in chemistry. (*Signed by*) Henry Stephen, O. G. Backeberg, H. R. Raikes.

NIYOGI, MANMATHA NATH, Calcutta, India. Asst. Chemical Examiner for Customs, Rangoon, India. Indian. M.Sc., Calcutta University, 1914. Asst. to the Chemical Examiner for Customs and Excise, Calcutta, for about nine years, there prepared Sikes's tables for use with glass hydrometers and conducted a series of experiments to find out a suitable power alcohol for India. For three years Reader in Analytical Chemistry, Dacca University. (*Signed by*) A. Chaston Chapman, R. L. Jenks, J. R. Nicholls.

OCKRENT, CHARLES, 4, Buccleuch Terrace, Edinburgh. British. Research Chemist. B.Sc. (1st Class Hons.), Ph.D., University of Edinburgh. Four years' research experience, Carnegie Research Scholar. Publications: *J. Physical Chem.*, 1930, **34**, 2286, 2297, 2841; 1931, **35**, 3354; *Nature*, 1930, **125**, 853; *J.C.S.*, 1932, 613. (*Signed by*) James Kendall, J. A. V. Butler, Ronald B. Mooney.

RICHTER, DEREK, 11, Frenchay Road, Oxford. British. Research Student. B.A., B.Sc. (Oxford); D.Phil. (Munich). "The Oxidation of Aldehydes," Wieland and Richter, *Annalen*, 1931, **486**, 226; "Induced Reactions," Richter, *Berichte*, 1931, **64**, 1240. (*Signed by*) Wilson Baker, B. K. Blount, L. H. Briggs.

ROSE, FRANCIS LESLIE, 13, Arundel Street, Nottingham. English. Research Student. B.Sc., Special Chemistry, 1st Class, London External. Two years' post-graduate research at University College, Nottingham. *J.C.S.*, 1931, 3337. (*Signed by*) E. A. Wagstaff, B. D. Shaw, H. H. Barber.

ROSSER, REGINALD JOHN, Endellion, Wilkins Road, Cowley, Oxford. British. Research Chemist. B.Sc. (Wales); B.Sc., D.Phil. (Oxon.). Three years' research in organic chemistry at the Dyson Perrins Laboratory, Oxford. Research Chemist under the Chemical Defence Research Department since October, 1930. Plant and Rosser, *J.C.S.*, 1928, 2454; 1929, 1861. (*Signed by*) Robert Robinson, E. Hope, Wilson Baker.

RUIGH, WILLIAM LIVINGSTONE, 22, Seminary Avenue, Rahway, New Jersey, U.S.A. (Mailing address: Laboratory for Pure Research, Merck & Co., Rahway, New Jersey, U.S.A.) American. Research Chemist. B.S., Ph.D. (Princeton). Sayre Fellow, 1927–28; Du Pont Fellow, 1928–29; Research Assistant, 1929–30, at Princeton University. Research Chemist with Merck & Co., 1930 to date. Work on molecular rearrangements and synthetic drugs. *J. Amer. Chem. Soc.*, 1929, **51**, 1456; 1931, **53**, 2662, 3131. (*Signed by*) Alan W. C. Menzies, Wilder D. Bancroft, L. W. McCay.

SANDILANDS, JAMES, 102, Westholmes Gardens, Musselburgh, Midlothian. British. Lecturer in Chemistry. Fellow of the Institute of Chemistry. (*Signed by*) James Kendall, James Walker, T. Slater Price.

SLATER, ROBERT HENRY, 4, Kingsburgh Road, Murrayfield, Edinburgh. British. Research Chemist. B.Sc., Ph.D. (Edinburgh University). Have published sixteen papers on chemical science as follows: ten papers on pure chemistry in the *J.C.S.*, 1924, **125**, 1312, 2278; 1925, **127**, 1490; 1926, **129**, 214, 2760; 1928, 32, 789; 1930, 1209; 1931, 107, 1938; five papers on biochemistry in the *Biochem. J.*, 1926, 486; 1927, 40, 1065; 1929, 410, 416; and one paper in the *Proc. Roy. Soc. Edin.*, 1930, 243. (*Signed by*) W. O. Kermack, George Barger, T. Slater Price.

STARKEY, JAMES WILLIAM, 410, Billinge Road, Highfield, Pemberton, Wigan (Address until July 1: 350, Crookesmoor Road, Sheffield). British. University Student. B.Sc., Sheffield University, 1931. Studied chemistry up to degree standard. (*Signed by*) G. M. Bennett, S. Glasstone, Arthur W. Chapman.

THOMPSON, HENRY WILLIAM, 23, Beech Croft Road, Oxford. British. Research Student. B.Sc. and Ph.D., London. Keddey Fletcher-Warr Student of the University of London, 1931 to date. (*Signed by*) Robert Robinson, G. S. Ward, P. V. Nair.

WARD, ALFRED THOMAS, 9, Regent Place, Rugby, Warwickshire. British. Research Chemist. B.Sc. (London), 1922; M.Sc. (London), 1924. Graduated from University College, Nottingham. During the last six years I have been mainly concerned with the development and study of synthetic resinous materials. *J.C.S.*, 1924, **125**, 423–6, 426–9, 69–71. (*Signed by*) F. Stanley Kipping, E. B. R. Prideaux, J. B. Firth.

WOODWARD, FOSTER NEVILLE, 20, Staplands Road, Broad Green, Liverpool. British. Research Chemist. B.Sc. (Hons.), University of London. Research Assistant at H.M. Research Establishment, Sutton Oak, Lancs., since Oct. 1930. (*Signed by*) Robert Robinson, O. L. Brady, H. G. G. Mohrhenn.

Forms of Recommendation for Fellowship recommended by the Council for presentation to ballot under Bye-Law I (2):

KUNZENBACKER, AUGUST ANTON, 59, Leslie Place, Irvington, N.J., U.S.A. American. Instructor in Chemistry. A.B., Villanova College; M.A. (to be conferred June 1932), Villanova College. Factory foreman in Intermediate Manuf. plants. Instructor in Chemistry (at present). Member Amer. Chemical Society. (*Signed by*) W. H. Fulweiler.

MAZZUCCHELLI, ARRIGO, Regia Università di Pisa, Italy. Italian. Professor of Chemistry, University of Pisa. Dottore in chimica e professore di Università. Formerly Professor of General Chemistry at the University of Messina, now Professor of Physical Chemistry at the University of Pisa. (*Signed by*) E. Hope.

TRESSLER, DONALD KITELEY, The Birdseye Laboratories, Gloucester, Massachusetts, U.S.A. American. Chief Chemist. A.B. University of Michigan, 1913. Ph.D. Cornell University, 1918. *Contributions*—Articles: "Some Considerations Concerning the Salting of Fish," "Nutritive Value of Fish and Shellfish," and "Iodine Content of Sea Foods," Bureau of Fisheries Documents Nos. 884, 1000, and 967 respectively. Books: "Marine Products of Commerce"—Chemical Catalog Co., New York, 1923. "The Wealth of the Sea"—The Century Company, New York, 1927. Past positions: Instructor, Oregon Agric. College; Special Ass't., U.S. Bureau of Fisheries; Fellow, Mellon Institute; Professor Univ. of Pittsburgh. Present position: Chief Chemist, The Birdseye Laboratories. (*Signed by*) Edward C. Worden, Joseph Rosin.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BRITISH DRUG HOUSES, LTD. B.D.H. reagents for delicate analysis and "spot" tests. London 1932. pp. iii + 39. (*Reference.*) 2*s.* 6*d.* net. From the Director.

GREENAWAY, ALFRED JOHN, THORPE, JOCELYN FIELD, and ROBINSON, ROBERT. The life and work of Professor William Henry Perkin, M.A., Sc.D., LL.D., Ph.D., F.R.S. London (1932). pp. 138. ill. (*Reference.*) From the Authors.

INSTITUT INTERNATIONAL DE CHIMIE SOLVAY. Quatrième Conseil de Chimie. Rapports et discussions relatifs à la constitution et à la configuration des molécules organiques. Paris 1931. pp. xiv + 526. ill. (*Reference.*) From Sir William J. Pope, K.B.E.

LOWRY, THOMAS MARTIN. Inorganic chemistry. 2nd edition. London 1931. pp. xvi + 1102. ill. 25*s.* net. (*Recd.* 14/5/32.) From the Publishers: Messrs. Macmillan & Co.

MITCHELL, ALEC DUNCAN, and WARD, ALLAN MILES. Modern methods in quantitative chemical analysis. London 1932. pp. xii + 178. 6*s.* net. (*Recd.* 6/5/32.) From the Publishers: Messrs. Longmans Green & Co.

PERKIN, WILLIAM HENRY. *See* GREENAWAY, ALFRED JOHN.

ROGERS, ALLEN. Industrial chemistry. 5th edition. 2 vols. [New York] 1931. pp. xiv + 641 + xiv, xii, 642 to 1518. ill. 60*s*. net. (*Recd.* 12/5/32.)

From the London Publishers: Messrs. Macmillan & Co.

SANDS, CLAYS AND MINERALS. A magazine devoted to economic minerals. Vol. I, etc., Chatteris 1932 +. (*Reference.*)

From the Publisher: Mr. A. L. Curtis.

SOAP: with which is included an insecticide and disinfectant section. Vol. VIII, etc. New York 1932 +. (*Reference.*)

From the Bureau of Chemical Abstracts.

TAYLOR, FRANK SHERWOOD. Inorganic and theoretical chemistry. London 1931. pp. xii + 818. ill. 12*s*. 6*d*. (*Recd.* 19/5/32.) From the Publishers: Messrs. William Heinemann.

II. *By Purchase.*

ARRHENIUS, SVANTE. *See* RIESENFELD, ERNST HERMANN.

EDER, JOSEF MARIA. Ausführliches Handbuch der Photographie. Vol. III. Part 3. Sensibilisierung und Desensibilisierung. By J. M. EDER and — LÜPPO-CRAMER. Halle (Saale) 1932. pp. viii + 361. ill. *M*. 27.50. (*Recd.* 11/5/32.)

ELLIS, DAVID. Sulphur bacteria. A monograph. London 1932. pp. x + 261. ill. 21*s*. net. (*Recd.* 26/4/32.)

FINDLAY, ALEXANDER. The phase rule and its applications. 7th edition. London 1931. pp. xvi + 326. ill. 10*s*. 6*d*. net. (*Recd.* 26/4/32.)

GESSNER, OTTO. Die Gift- und Arzneipflanzen von Mitteleuropa: mit besonderer Berücksichtigung ihrer Wirkungen. Heidelberg 1931. pp. viii + 347 + 128 plates. *M*. 9.50. (*Recd.* 11/5/32.)

JAMIESON, GEORGE S. Vegetable fats and oils. The chemistry, production and utilization of vegetable fats and oils for edible, medicinal and technical purposes. (American Chemical Society Monograph Series.) New York 1932. pp. 444. ill. $6.50 net. (*Recd.* 26/4/32.)

KASSEL, LOUIS S. The kinetics of homogeneous gas reactions. (American Chemical Society Monograph Series.) New York 1932. pp. 330. ill. $6.50 net. (*Recd.* 26/4/32.)

KOHLRAUSCH, KARL WILHELM FRITZ. Der Smekal–Raman–Effekt. Berlin 1931. pp. viii + 392. ill. *M*. 33.80. (*Recd.* 11/5/32.)

NEEDHAM, DOROTHY MOYLE. The biochemistry of muscle. London 1932. pp. viii + 166. ill. 5*s*. net. (*Recd.* 26/4/32.)

RIESENFELD, ERNST HERMANN. Svante Arrhenius. Leipzig 1931. pp. 110. ill. *M*. 8.50. (*Recd.* 11/5/32.)

SCHMIDT, JULIUS. A text-book of organic chemistry. 2nd English edition. By HAROLD GORDON RULE. London 1932. pp. xxiv + 844. 25*s*. net. (*Recd.* 21/4/32.)

SCHWYZER, JULIUS. Die Fabrikation pharmazeutischer und chemisch-technischer Produkte. Berlin 1931. pp. viii + 488. ill. *M*. 42. (*Recd.* 11/5/32.)

SNODGRASS, KATHARINE. Margarine as a butter substitute. California (1930). pp. xiv + 334. ill. $3 net. (*Recd.* 26/4/32.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 56. A soil survey of . . . Renmark irrigation district, South Australia. By T. J. MARSHALL and P. D. HOOPER. Melbourne 1932. pp. 23. ill.

BUSCH, HENRI ALEXANDER JOHANNES. Synthese von 3 : 4 : 8-Trimethoxyphenanthren. Oxydation von β-Methylmorphimethin. Berlin 1907. pp. 30.

CARMICHAEL, EMMETT B. The effect on the toxicity of tetanus toxin of withholding water from the diet. (From the *J. Med. Assoc. State Alabama*, 1931, **1**.)

—— The action of ultra-violet radiation on *Limax flavus* Linnaeus. I. (From *Physiol. Zoölogy*, 1931, **4**.)

—— A convenient preparation for the removal of hair. (From *Science*, 1932, **75**.)

GEORGI, CHARLES DENIS VICTOR, BUCKLEY, THOMAS ALFRED, and TEIK, GUNN LAY. Hydnocarpus oils in Malaya. (*Dept. Agric. Straits Settlements and Fed. Malay States, Sci. Series*, 1932, No. 9.)

IMAI, HIROSHI, and HAGIYA, MASAMI. Ueber die Natur der β-Umwandlung der Kupfer-Zinnlegierungen. II. (From the *Mem. Ryojun Coll. Eng.*, 1932, **5**.) ill.

KAWAMURA, JIPPEI. Über das ätherische Öl von *Sciadopitys verticillata* S. et Z. (From the *Bull. Imp. Forestry Exper. Stat.*, 1931.) [In Japanese. German summary.]

KITAJIMA, KIMIZO, and KAWAMURA, JIPPEI. Über die antiseptische Wirkung der höheren Fettsäuren gegen holzzerstörende Pilze. (From the *Bull. Imp. Forestry Exper. Stat.*, 1931.)

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 74. International Conference on Safety in Mines at Buxton, 1931. London 1932. pp. 67. ill.

REGAN, COLSTON JAMES. The ventilation of vehicular tunnels with particular reference to those at Blackwall and Rotherhithe. (From the *Ann. Report L.C.C.*, 1930, **4**.)

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 2nd, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT announced that Professor P. Debye, of Leipzig, had accepted the invitation of the Council to deliver the Fifteenth Faraday Lecture on March 29th, 1933.

Messrs. F. W. Pinkard and E. G. Cox were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Kenneth Walter Francombe, 136, Victoria Street, S.W. 1.
David Thomas Lewis, B.Sc., Edward Davies Chemical Laboratories, University College of Wales, Aberystwyth.

Dr. F. M. Hamer and Mr. W. Rogie Angus were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:

Janet Catherine Bell, B.A.
Henry William Blair.
Thomas Robert Bolam, D.Sc.
Bernard Cavanagh, M.A., D.Sc., F.I.C.
Alec Bramley Densham, B.A.
Gihei Hamaguchi.
Reginald Haydn Hopkins, D.Sc., F.I.C.
Frederick Oliver Howitt, M.Sc., A.I.C.
Arthur Jones, M.Sc.
Alexander King, M.Sc., A.R.C.S., D.I.C.
August Anton Kunzenbacher, A.B.
Alexander Lawson, B.Sc., Ph.D.
James Dalrymple Loudon, B.Sc.
Guy Frederic Marrian, D.Sc.
John Henry Martin, B.Sc., A.R.C.S.
Arrigo Mazzucchelli.
Kenneth Angus Murray, B.Sc.
Manmatha Nath Niyogi, M.Sc.
Charles Ockrent, B.Sc., Ph.D.
Derek Richter, B.A., B.Sc., D.Phil.
Francis Leslie Rose, B.Sc.
Reginald John Rosser, B.Sc., D. Phil.
William Livingstone Ruigh, B.S., Ph.D.
James Sandilands, F.I.C.
Robert Henry Slater, B.Sc., Ph.D.
James William Starkey, B.Sc.
Henry William Thompson, B.Sc., Ph.D.
Donald Kiteley Tressler, A.B., Ph.D.
Alfred Thomas Ward, M.Sc.
Foster Neville Woodward, B.Sc.

The following papers were read:

"The supposed isomerism among the pallado-diammines." By H. D. K. DREW, F. W. PINKARD, W. WARDLAW, and G. H. PRESTON.

"The crystalline structure of tetramminoplatinous chloride." By E. G. Cox.

"Primary photochemical processes. Part I. The decomposition of formaldehyde." By R. G. W. Norrish and F. W. Kirkbride.

"The structure of glutaconic acids and esters. Part IV. Some cyclic glutaconic derivatives." By G. A. R. Kon and H. R. Nanji.

"The reaction of selenium dioxide with some unsaturated hydrocarbons." By H. L. Riley and N. A. C. Friend.

The Council has made the following grants from the Research Fund :

	£	s.	d.
Additive reactivity of ethylene derivatives : addition of bromine. S. V. Anantakrishnan. (Univ. Coll., London)	6	0	0
On the constitution of strychnine alkaloids. L. H. Briggs. (Oxford Univ.)	10	0	0
The surface tensions of solutions containing more than one solute. J. A. V. Butler. (Edinburgh Univ.)	13	0	0
Development of terpene chemistry, and in particular the synthesis of cyclic structures containing quaternary carbon atoms which are common members of two ring systems. G. R. Clemo. (Armstrong Coll.)	10	0	0
Synthetical studies in Jaborandi alkaloids. A. N. Dey. (Imperial Coll.)	10	0	0
Preparation of poly (acyl amino acyl) amines. G. Discombe. (St. Bartholomew's Medical School)	6	0	0
The stereochemistry of iridium. H. D. K. Drew. (East London Coll.)	20	0	0
A study of the polyhalides and of electropositive iodine. D. R. Duncan. (Private laboratory)	5	0	0
Selenates and other salts of praseodymium. J. A. N. Friend. (Tech. Coll., Birmingham)	10	0	0
Magnetic susceptibility and other properties of binary and ternary alloys. (Miss) W. R. A. Hollens. (Bedford Coll.)	6	0	0
The dissociation constants of organic acids (*cont'd*). G. H. Jeffery. (Univ. Coll., Southampton)	12	0	0
Constitution of aconitine. A. Lawson. (Univ. Coll., Southampton)	15	0	0
Structure of dipinenes. R. J. W. Le Fèvre. (Univ. Coll., London)	10	0	0
Stereochemistry of 2 : 2′-disubstituted diphenyls. (Miss) M. S. Leslie. (Bedford Coll.)	5	0	0
Preparation of isomeric acids and their nitriles (*cont'd.*). R. A. Letch. (Imperial Coll.)	4	0	0
Asymmetric synthesis in the diaryl series. (Miss) E. E. J. Marler. (Bedford Coll.)	5	0	0
Structure of certain dibasic acids. D. R. Maxted. (Reading Univ.)	5	0	0

	£	s.	d.
Ring closure of *cyclo*pentane derivatives. E. M. Meade. (Imperial Coll.)	7	0	0
Cyclic unsaturated acids and esters. B. L. Nandi. (Imperial Coll.)	7	0	0
Acid catalysts in three carbon tautomerism. K. S. Nargund. (Imperial Coll.)	7	0	0
Adsorption from gas mixtures. C. Ockrent. (Edinburgh Univ.)	12	0	0
Stereochemistry of quaternary ammonium salts derived from diphenyl. (Miss) F. R. Shaw. (Bedford Coll.)	4	0	0
Additive properties of certain poly olefinic compounds. A. M. Sheikh. (Imperial Coll.)	5	0	0
Relation of nuclear reactivity to orientation in aromatic substitution. (Miss) M. S. Smith. (Univ. Coll., London) ...	6	0	0
Spatial structure of *cyclo*paraffins. W. A. Wightman. (Leeds Univ.)	10	0	0
	£210	0	0

THE LIBRARY.

The Library will be closed for stocktaking from Monday, August 1st, until Saturday, August 13th (inclusive). During the following four weeks (August 15th to September 10th) the Library will close daily at 5 p.m.

HARRISON MEMORIAL PRIZE.

In accordance with the Trust Deed governing the Harrison Memorial Fund, the Selection Committee, consisting of the Presidents of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, and the Pharmaceutical Society, will proceed to make an award of the Harrison Prize in December next.

The Prize, of the value of about £150, is to be awarded to the chemist of either sex, being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December, 1932.

Applications, five copies of which must be submitted, should contain the following information :

(*a*) Name (in full).
(*b*) Age (birth certificate to accompany application).
(*c*) Degrees (name of University where obtained).

(*d*) Other qualifications.
(*e*) Experience.
(*f*) Titles of published papers, with authors' names, including full references to publication.
(*g*) Where research was carried out.
(*h*) Testimonials or references.
(*i*) Any other information bearing on the application.

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by

The President,
The Chemical Society,
Burlington House,
Piccadilly,
London, W. 1.,

not later than Thursday, December 1st, 1932.

List of Papers, or Abstracts thereof, received between May 19th and June 16th, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"A study of the polyhalides. Part III. Behaviour in solution." By H. W. CREMER and D. R. DUNCAN.

"The vapour pressure of chlorine heptoxide." By C. F. GOODEVE and J. POWNEY.

"The basic character of α-methoxy-derivatives." By K. C. ROBERTS.

"Molecular dissymmetry dependent on restriction of rotation about a single bond. Part II. Optically active 1-ethyl-8-benzenesulphonylethylquinolinium salts." By W. H. MILLS and J. G. BRECKENRIDGE.

"Some physical properties of tertiary arsines." By W. J. JONES, W. J. C. DYKE, G. DAVIES, D. G. GRIFFITHS, and J. H. E. WEBB.

"Some physical constants of methyl fluoride and the atomic weight of fluorine." By W. CAWOOD and H. S. PATTERSON.

"The behaviour of chelate groupings attached to platinum and to palladium." By H. D. K. DREW.

"Substituted malonamides in part derived from arsanilic acid." By J. KENNEDY.

"Orientation in the substitution reactions of alkylnaphthalenes. Part II. Nitration of α-methylnaphthalene." By H. W. THOMPSON.

"Studies in the chemistry of creatine and creatinine. Part II. Supposed acyl derivatives of creatine." By H. R. ING.

"The influence of Bz.-substituents on some reactions of the anthrones. Part II." By E. DE B. BARNETT.

"A constant level regulator for water baths." By T. B. VINYCOMB and A. I. VOGEL.

"On Australian gum. A posthumous note on the work of the late C. O'Sullivan, F.R.S." By H. D. O'SULLIVAN.

"Note on the ammonium sulphide–formalin precipitate." By C. G. LE FÈVRE and R. J. W. LE FÈVRE.

"The system magnesium oxide–magnesium chloride–water." By C. R. BURY and E. R. H. DAVIES.

"The action of halogens on polycyclic indole derivatives. Part II. The bromination of the acyl derivatives of 8 : 9 : 10 : 11-tetrahydro-α′β′-naphthacarbazole and 7 : 8 : 9 : 10-tetrahydro-αβ-naphthacarbazole." By S. G. P. PLANT and (MISS) M. L. TOMLINSON.

"The action of sulphur on amines. Part III. The orientation of trithio-*o*-toluidine as 2 : 2′-diamino-5 : 5′-ditolyl trisulphide." By H. H. HODGSON and H. V. FRANCE.

"Researches in the phenanthridine series. Part II. Nitro- and amino-phenanthridines." By G. T. MORGAN and L. P. WALLS.

"Platinum with a co-valency of four: diquinolinoplatinous chlorides." By E. G. COX, F. W. PINKARD, W. WARDLAW, and H. SAENGER.

"Glycogen. Part II. Methylation and acetylation experiments." By G. K. HUGHES, A. K. MACBETH, and F. L. WINZOR.

"Phthalyl fluoride." By A. T. DANN, W. DAVIES, A. N. HAMBLY, R. E. PAUL, and G. S. C. SEMMENS.

"Organic derivatives of silicon. Part XLVI. Tetranitrotetraphenylsilicane." By F. S. KIPPING and J. C. BLACKBURN.

"Organic derivatives of silicon. Part XLVII. *cyclo*Hexylphenyl- and *cyclo*hexyl derivatives." By N. W. CUSA and F. S. KIPPING.

"Experiments on the synthesis of anthocyanins. Part XIV. Cyanenin chloride, malvenin chloride, and an indication of the synthesis of cyanin chloride." By A. LÉON and R. ROBINSON.

"Experiments on the synthesis of anthocyanins. Part XV. A synthesis of hirsutin chloride." By R. ROBINSON and A. R. TODD.

"3-β-Phenoxyethyl-4-methyl-2:6-dihydroxypyridine." By K. MATEJKA, R. ROBINSON, and J. S. WATT.

"Adsorption at the surface of solutions. Part I. The surface composition of water–alcohol solutions." By J. A. V. BUTLER and A. WIGHTMAN.

"Adsorption at the surface of solutions. Part II. The effect of lithium chloride on the surface of water–alcohol solutions." By J. A. V. BUTLER and A. D. LEES.

"The isomeric 2′:4′-dinitrophenyl derivatives of 3:4-toluylenediamine." By K. C. ROBERTS.

"The photochemical oxidation of alcohols by potassium dichromate. Part IV." By E. J. BOWEN and J. E. CHATWIN.

"The chemistry of alkyl*cyclo*pentanones. Part III. The synthesis of 3-methyl*cyclo*pentane-*spiro-cyclo*hexane-3:5-dione." By R. D. DESAI.

"4-Anilinoquinaldine derivatives." By O. G. BACKEBERG.

"Comparison of the directive powers of elements having consecutive atomic numbers. Part III. Nitrations of halogeno-2-phenylbenzopyrylium salts." By C. G. LE FÈVRE and R. J. W. LE FÈVRE.

"The constitution of vasicine. Part II." By T. P. GHOSH, S. KRISHNA, K. S. NARANG, and J. N. RÂY.

"A crystallographic comparison of certain malonates and sulphoacetates." By W. R. C. CURJEL.

"Phlobotannins. I. (*a*) General. (*b*) Synthesis of the ester of *p*-diprotocatechuic acid trimethyl ether and 3:4:4′-trimethoxy-*leuco*-flavanone and comparison of the product with fully methylated hemlock tannin. (*c*) A new method for the synthesis of depsides." By T. CURRIE and A. RUSSELL.

"The nitration of benzilic and fluorenecarboxylic acids." By F. L. ROSE.

ADDITIONS TO THE LIBRARY.

I. Donations.

FRANÇOIS, MARIE THÉRÈSE. Contribution a l'étude des huiles d'animaux marins: les alcools aliphatiques des graisses du cachalot. Laval 1929. pp. vi + 112.

—— Influence des corps dissous sur l'abaissement moléculaire du point de congélation dans le benzène et le nitrobenzène. Laval 1929. pp. 113 to 148. (*Recd.* 9/6/32.) From Dr. E. Lewkowitsch.

MUREX WELDING PROCESSES, LTD. Handbook for electric welders. 2nd edition. London 1932. pp. 91. ill. 1*s.* net. (*Recd.* 16/6/32.) From the Publishers.

RUBBER INFORMATION. A compendium of the rubber industry in all its branches. Edited by HARRY BRENNAN CRONSHAW. London (1932). pp. [240] + lxxiii. (*Reference.*) 10*s.*
From the Publishers: Messrs. W. Leonard Hill.

SIEBERT, G., G.M.B.H. Festschrift zum fünfzigjährigen Bestehen der Platinschmelze. Edited by H. HOUBEN. Hanau 1931. pp. xxiv + 338. ill. *M.* 10. (*Recd.* 23/5/32.) From the Editor.

SUOMALAISTEN KEMISTIEN SEURAN TOIMITTAMA. Suomen Kemistilehti. (Acta Chemica Fennica.) Vol. V, etc. Helsinki 1932 +. (*Reference.*) From the Editor.

TIERIE, GERRIT. Cornelis (Jacobszoon) Drebbel (1572–1633). Amsterdam 1932. pp. x + 128. ill. 4*s.* 6*d.* net. (*Recd.* 3/6/32.)
From the Author.

II. *By Purchase.*

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. Official and tentative methods of analysis. 3rd edition, 1930. Washington 1931. pp. xviii + 594. ill. $5.50 net. (*Recd.* 16/6132.)

GURWITSCH, LEO, and MOORE, HAROLD. The scientific principles of petroleum technology. New edition. London 1932. pp. xii + 572. ill. 30*s.* net. (*Recd.* 16/6/32.)

LEMMERMANN, OTTO. (Editor.) Methoden für die Untersuchung des Bodens. I. (1 *Beiheft, Z. Pflanz. Düng.*) Berlin 1932. pp. 90. ill. *M.* 6. (*Recd.* 15/6/32.)

PRINGSHEIM, HANS. The chemistry of the monosaccharides and of the polysaccharides. New York 1932. pp. xiv + 416. ill. $4 net. (*Recd.* 16/6/32.)

SIEMENS-KONZERN. Beryllium, its production and application. Translated by RICHARD RIMBACH and A. J. MICHEL. New York 1932. pp. 332. ill. $10 net. (*Recd.* 16/6/32.)

STIASNY, EDMUND. Gerbereichemie (Chromgerbung). Dresden 1931. pp. xii + 586. ill. *M.* 45. (*Recd.* 24/5/32.)

STOCKS, HERBERT BIRTWHISTLE. Water analysis for sanitary and technical purposes. 2nd edition. By WILLIAM GORDON CAREY. London 1932. pp. viii + 136. ill. 7*s.* 6*d.* net. (*Recd.* 16/6/32.)

WAESER, BRUNO. Alkalien und Erdalkalien. Dresden 1931. pp. viii + 196. *M.* 15. (*Recd.* 24/5/32.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 24. The preservative treatment of fence posts (with particular reference to Western Australia). By J. E. CUMMINS. Melbourne 1932. pp. 34. ill.

BARMORE, G. MILTON. The effect on wool of temperature and hydrogen ion concentration of the scouring bath. (From the *Amer. Dyestuff Rep.*, 1931, **20**.)

HOPPENBROUWERS, WILHELMUS JOHANNES. Oxdiazinen-(1 : 3 : 4). 's-Gravenhage 1932. pp. xvi + 156.

IMPERIAL CHEMICAL INDUSTRIES, LTD. Non-inflammable solvents. London [1932.] pp. 19.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. The relation of food to disease. By STANLEY DIXON. London 1932. pp. 38. ill.

NIERENSTEIN, MAXIMILIAN. Helvetius, Spinoza, and transmutation. (From *Isis*, 1932, **17**.)

PETTE, JAN WILLEM. Condensatie van meerwaardige alcoholen, suikers en oxyzuren met aldehyden onder invloed van P_2O_5. Leiden 1932. pp. xvi + 131.

ROOSMALEN, FRANCISCUS LAMBERTUS WOLTERUS VAN. Chloor- en broomderivaten van diphenyl. 's-Gravenhage 1932. pp. xvi + 108.

SCIENTIFIC AND INDUSTRIAL RESEARCH, DEPARTMENT OF. *Engineering Research*. Special Report No. 18. Properties of materials at high temperatures. 6.—The strength at high temperatures of six steels and three non-ferrous metals. By H. J. TAPSELL, A. E. JOHNSON, and W. J. CLENSHAW. London 1932. pp. iv + 44. ill.

—— *Food Investigation*. Special Report No. 42. The yellowing of the abdominal fat of frozen rabbits. By J. R. VICKERY. London. 1932. pp. iv + 27. ill.

SEBELIEN, JOHN. Further analyses of old bronzes. (From the *Avh. Norske Vid.-Akad. Oslo*, 1931.)

TRIFONOV, N. A. Über das magnetische Drehungsvermögen binärer flüssiger Systeme. (From the *Sci. Diary, Saratov State Univ.*, 1925, **4**.) [In Russian. German summary.]

TRIFONOV, N. A., and TSCHERBOV, S. J. Die thermische Analyse des Systems: Phenylhydrazin—Essigsäure. (From the *Bull. Inst. rec. biol. Perm.*, 1929, **6**.) [In Russian. German summary.]

UNITED STATES. *Department of Agriculture*. Circular No. 50. Proximate composition of fresh fruits. Revised edition. By CHARLOTTE CHATFIELD and LAURA I. MCLAUGHLIN. Washington 1931. pp. 19.

—— —— Circular No. 146. Proximate composition of fresh vegetables. By CHARLOTTE CHATFIELD and GEORGIAN ADAMS. Washington 1931. pp. 24.

—— —— Circular No. 190. Buckwheat milling and its by-products. By MAYNE R. COE. Washington 1931. pp. 11. ill.

ECHNOLOGY DEPT.

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PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 20th, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	*Died.*
William Briggs	Dec. 18th, 1884.	June 19th, 1932.
Frank Brownsword	Dec. 4th, 1890.	June 1st, 1932.
Henry Burgess	Feb. 17th, 1921.	Oct. 3rd, 1931.
Alfred Chaston Chapman	June 17th, 1886.	Oct. 17th, 1932.
Cecil Howard Cribb	Mar. 3rd, 1887.	June 13th, 1932.
Ernest R. Dovey	Dec. 4th, 1919.	June 9th, 1932.
Ernest C. Gill	Feb. 1st, 1883.	Dec. 1920.
Thomas Gray	Dec. 15th, 1892.	Sept. 26th, 1932.
John A. Hall	Jan. 7th, 1889.	Mar. 18th, 1932.
Frank C. R. Hemingway	Dec. 6th, 1900.	June 28th, 1932.
Walter Hills	May 15th, 1873.	July 25th, 1932.
Richard A. Hoyle	Apr. 4th, 1889.	June 14th, 1932.
John Mastin	Dec. 6th, 1906.	July 9th, 1932.
Arthur Ross	Feb. 15th, 1894.	Mar. 4th, 1932.
Alexander Humboldt Sexton	Feb. 19th, 1874.	June 21st, 1932.
John G. Spenzer	June 7th, 1894.	July 26th, 1932.
Sir Richard Threlfall	May 4th, 1899.	July 10th, 1932.
Charles E. Whiteley	Feb. 17th, 1904.	Sept. 26th, 1932.
Winifred Mary Wright	Feb. 21st, 1929.	June 21st, 1932.

It was announced that :—

1. In consequence of the extra work which now devolves on the Honorary Secretaries, the Council, at its meeting on July 5th, decided that it is desirable to seek powers to appoint a third Honorary Secretary and to allow the office of Foreign Secretary to lapse. The Council has nominated Professor Samuel Sugden to act unofficially as Honorary Secretary until the altered Bye-Law allowing for the appointment of a third Honorary Secretary has been passed and become operative.

2. At the Ordinary Scientific Meeting on the 17th November, Professor G. Ingle Finch, M.B.E., will open a discussion on "Combustion of Gases in Electric Discharges."

3. The Fourth Liversidge Lecture, entitled "Physical Atomic

Weights," will be delivered by Dr. F. W. Aston, F.R.S., in the Medical Lecture Theatre of the University of Birmingham on Friday, 25th November, at 5.30 p.m., and not in the Chemistry Lecture Theatre as previously announced. An informal dinner will be held at the Queen's Hotel (adjoining New Street Station) the same evening at 7.30 p.m., the cost of the dinner being 8*s*. Those desiring to attend the Dinner should communicate with Dr. W. Wardlaw, F.I.C., The University, Edgbaston, Birmingham, by Friday, 18th November.

4. Applications for the Annual Reports for 1932 at the reduced price of 5*s*. 6*d*. should reach the Assistant Secretary by the 16th January, 1933.

5. The Annual Chemical Dinner will be held at the Connaught Rooms, Great Queen Street, W.C.2, on Thursday, 8th December, 1932, at 7 for 7.30 p.m. The price of the tickets is 12*s*. 6*d*. each.

6. A communication has been received from the Committee of the Van 't Hoff Fund for the endowment of research in pure and applied chemistry. The amount from this fund available for distribution during 1933 is about 1200 Dutch guilders.

A Committee consisting of Professor A. F. Holleman (President), Professor F. M. Jaeger, Professor A. Smits, and Professor J. P. Wibaut (Secretary) has been appointed to award grants. Applications should be sent before the 1st April, 1933, by registered post to: "Het Bestuur der Koninklijke Akademie van Wetenschappen, bestemd voor de Commissie van het van't Hoff-fonds, Trippenhuis, Klovenierburgwal, Amsterdam." Every applicant is requested to submit a detailed account of the manner in which he proposes to expend the grant and to state the reasons for which he makes his application. Papers embodying the results of the research may be published in any journal, but acknowledgment must be made of the source of the grant. Copies of papers containing the results of the research must be forwarded to the Committee.

Messrs. B. K. Blount, A. R. Todd, and A. D. Ainley were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of:—

Ronald Percy Bell, B.A., B.Sc., "Willowfield," Courthouse Road, Maidenhead.
Walter Clarke, B.Sc., 296, Katherine Road, Forest Gate, E. 7.
Kathleen Culhane, B.Sc., 42, Sutton Court, Chiswick, W. 4.
Ronald Cuthill, M.Sc., Ph.D., 420, Livingstone Road, Bolton Villas, Bradford.
David Gwynne Davies, Ph.D., "Yardley," South Road, Aberystwyth.
Leonard Arthur Haddock, B.Sc., A.I.C., 2, Station Road, Enfield, Middlesex.
Henry William Headland, B.Sc., 101, Belgrave Road, Wanstead, E. 11.

Henry Mark Hutton, jun., 23, Montpellier Crescent, New Brighton, Cheshire.
Hywel Oliver Jenkins, Ph.D., 29, High Street, Gilfach Goch, near Bridgend, Glamorgan.
Rolfe Fairbank Kirby, B.Sc., Highfield House, Weelsby, Grimsby.
Edwin Charles Higgins Lawrence, B.Sc., A.R.C.S., Organic Research Laboratories, Royal College of Science, South Kensington, S.W. 7.
Charles Frederick Linnitt, B.Sc., 14, Gloucester Row, Weymouth, Dorset.
John MacArthur, M.A., Ph.D., Schoolhouse, Annbank, Ayrshire.
Henry Brewer Milner, M.A., D.I.C., 4, Wycombe Gardens, Golders Green, N.W. 11.
Hugh Bryan Nisbet, B.Sc., F.I.C., 32, Millar Crescent, Edinburgh.
John Pearson, B.Sc., 38, Moira Road, Eltham, S.E. 9.
Thelma Muriel Reynolds, M.Sc., Somerville College, Oxford.
Joseph Harry Roberts, Heaton Moor College, Heaton Moor, Stockport.
William George Sheppard, 49, Stanley Road, Carshalton, Surrey.
Frederick Rowlandson Snell, B.A., B.Sc., Shotover, Park Avenue, Eastbourne.

The following forms of recommendation have been accepted by the Council under Bye-Law I (2):

Frank Charles Cochrane, Pretoria Hospital, P.O. Box 437, Pretoria.
Venancio Deulofeu, Dr., Casilla Correo 2539, Buenos Aires, Argentine.
Koovelimadam Rama Narayana Iyer, B.A., M.Sc., Quilon P.O., Travancore State, India.
Shiam Sunder Joshi, D.Sc., Chemistry Department, Meerut College, India.
Geoffrey Milne, M.Sc., Amani (via Tanga), Tanganyika Territory, East Africa.
Ivor Lindow Robson, Cliff House, Sandakan, British North Borneo.

Dr. A. E. Bradfield and Mr. G. H. Martin were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows:—

Joseph Kennedy, B.Sc.
Austin Raymond Martin, B.Sc., Ph.D.
Owen Morris.
Sunil Coomar Mükhopadhyay, B.Sc.
Augustus Stephens.
Mikio Tsuda.

The following papers were read:—

"The stereochemistry of 2 : 2′-disubstituted diphenyls. Part II. The optical resolution of diphenyl-2 : 2′-disulphonic acid." By (Miss) M. S. Lesslie and E. E. Turner.

"Experiments on the synthesis of anthocyanins. Part XVII. The syntheses of pelargonin, peonin, and cyanin chlorides." By R. Robinson and A. R. Todd.

"Molecular dissymmetry and physiological activity." By L. H. Easson and E. Stedman.

"The constitution of eremophilone and of two related hydroxyketones from the wood oil of *Eremophila Mitchelli*." By A. E. Bradfield, A. R. Penfold, and J. L. Simonsen.

Particulars of meetings to be held during November are given on p. 80.

RESEARCH FUND.

A Meeting of the Research Fund Committee will be held in December next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Thursday, December 1st, 1932. Applications from Fellows will receive prior consideration.

All persons who received grants in December 1931, or in December of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by December 1st.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

In future, grants will be awarded in December of each year instead of in June and December as heretofore. Reports of grants made in June of any year, which have not been closed, must reach the Assistant Secretary by *December 1st*, 1933.

BRITISH CHEMICAL ABSTRACTS "A" FOR 1933.

(Printed on one side of the page only.)

The Abstracts "A" (Pure Chemistry) for 1933, printed on one side of the page only, will be issued to Fellows who make application by December 31st, 1932. The price is £1 10*s*. A remittance for this amount must accompany each application, and Fellows should state whether they desire their copy gummed or ungummed.

HARRISON MEMORIAL PRIZE.

In accordance with the Trust Deed governing the Harrison Memorial Fund, the Selection Committee consisting of the Presidents of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, and the Pharmaceutical Society, will proceed to make an award of the Harrison Prize in December 1932.

The Prize, of the value of about £150, is to be awarded to the chemist of either sex, being a natural-born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any

branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December 1932.

Applications, five copies of which must be submitted, should contain the following information :—

(*a*) Name (in full).
(*b*) Age (birth certificate to accompany application).
(*c*) Degrees (name of University where obtained).
(*d*) Other qualifications.
(*e*) Experience.
(*f*) Titles of published papers, with authors' names, including full references to publication.
(*g*) Where research was carried out.
(*h*) Testimonials or references.
(*i*) Any other information bearing on the application.

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by

The President,
The Chemical Society,
Burlington House,
Piccadilly,
London, W.1,

not later than Thursday, December 1st, 1932.

List of Papers, or Abstracts thereof, received between June 16th and October 20th, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"The chlorination of iodophenols. Part V. The chlorination of *m*-iodophenol." By S. Buchan and H. McCombie.

"The oxidation of carbonyl sulphide." By F. L. Hovde and H. W. Thompson.

"Explosions of hydrogen–oxygen and methane–oxygen mixtures." By H. W. Thompson and F. L. Hovde.

"The chemistry of the ψ-thiohydantoins. Part I. The bromination of diphenyl-ψ-thiohydantoin and its *o*-tolyl homologue." By M. O. Farooq, R. F. Hunter, and H. Morland.

"Some Walden inversion reactions of the *p*-toluenesulphonic and *p*-toluenesulphinic esters of *l*-phenylmethylcarbinol." By J. KENYON, H. PHILLIPS, and F. M. H. TAYLOR.

"Studies of valency. Part XVII. The absorption spectrum of antimony iodide." By C. B. ALLSOPP and T. M. LOWRY.

"The effect of aqueous bromine on benzene in tropical sunlight." By J. P. C. CHANDRASENA.

"Aminobenzthiazoles. Part XIII. The hydrodibromides of the 5-bromo-1-alkylaminobenzthiazole series, and a study of the bromination of *s*-*p*-bromophenylethylthiocarbamide." By R. F. HUNTER and N. A. KHAN.

"The structure of *l*-erythrose." By V. DEULOFEU.

"The dissociation constants of organic acids. Part VII. Acetic acid." By G. H. JEFFERY and A. I. VOGEL.

"Antiseptics and anthelminthics. Part I. 1-Alkyl-2-naphthols." By K. C. GULATI, S. R. SETH, and K. VENKATARAMAN.

"The reaction between hydrogen iodide and chlorine." By R. B. MOONEY and H. G. REID.

"The Walden inversion. Part IV." By H. N. K. RÖRDAM.

"The Walden inversion. Part V." By H. N. K. RÖRDAM.

"Nitrous acid as a nitrating agent. Part III. The nitration of *p*-dimethylaminoacetanilide." By H. H. HODGSON and J. H. CROOK.

"Conductimetric analysis. Part I. Acids and acid mixtures." By E. C. RIGHELLATO and C. W. DAVIES.

"Conductimetric analysis. Part II. Tan liquors and leather extracts." By E. C. RIGHELLATO and C. W. DAVIES.

"The parachor of rhenium." By H. V. A. BRISCOE, P. L. ROBINSON, and A. J. RUDGE.

"5-Sulpho-3-nitrobenzoic acid and 5-sulpho-3-hydroxybenzoic acid." By M. S. SHAH and C. T. BHATT.

"4-Sulphosalicyclic acid and its derivatives." By M. S. SHAH, C. T. BHATT, and D. D. KANGA.

"Studies in thiol series. Part I. Thiol derivatives of *o*-, *m*-, and *p*-methoxytoluenes." By M. S. SHAH, C. T. BHATT, and D. D. KANGA.

"Studies in thiol series. Part II. Thiol derivatives of *o*-, *m*-, and *p*-methoxybenzoic acids." By M. S. SHAH, C. T. BHATT, and D. D. KANGA.

"Note on the nitration of some halogen derivatives of aniline and acetanilide." By H. B. NISBET.

"The reactivity of groups substituted in the acridone ring. Part I. Replacement of nitro-groups by piperidyl and piperazyl." By H. B. NISBET and (in part) A. B. GOODLET.

"The dipole moments of quinoline and *iso*quinoline." By R. J. W. Le Fèvre and J. W. Smith.

"Studies in the reactivity of aromatic hydroxyl groups. Part III." By H. L. Bassett and (Miss) A. O'Leary.

"Studies in the mechanism of flame movement. Part II. The fundamental speed of flame in mixtures of methane and air." By H. F. Coward and F. J. Hartwell.

"Trypanocidal action and chemical constitution. Part XIV. The relative velocity of oxidation of arylarsenoxides." By A. Cohen, H. King, and (Miss) W. I. Strangeways.

"A titration method for the determination of water." By R. P. Bell.

"The heat of solution of water vapour in various solvents." By R. P. Bell.

"Rhatany catechin." By M. Nierenstein.

"Ionic interchange in sulphur sols. The lyotropic series and the mechanism of coagulation." By T. R. Bolam and G. Bowden.

"Studies in dielectric polarisation. Part II. Benzene solutions of *n*-propyl mercaptan, *n*-butyl mercaptan, thiophenol, and acetonitrile." By E. C. E. Hunter and J. R. Partington.

"Studies in dielectric polarisation. Part III. Benzene solutions of methyl, *n*-propyl, and *n*-butyl sulphides." By E. C. E. Hunter and J. R. Partington.

"Studies in dielectric polarisation. Part IV. Benzene solutions of methyl and ethyl thiocyanates and methyl, ethyl, and allyl *iso*thiocyanates." By E. C. E. Hunter and J. R. Partington.

"The nitration of 3-methoxyacenaphthenequinone and 2-methoxynaphthalic anhydride." By R. I. Davies, I. M. Heilbron, and F. Irving.

"The oxidation products of 1 : 2 : 5-trimethylnaphthalene." By I. M. Heilbron and D. G. Wilkinson.

"The action of nitric acid on the 1-acyl-2 : 3-diphenylindoles." By R. C. G. Fennell and S. G. P. Plant.

"Synthesis of alkylphenanthrenes. Part IV. 1-Ethyl-7-methyl- and 1-ethyl-7-*iso*propyl-phenanthrenes. Constitution of abietic and *d*-pimaric acids." By R. D. Haworth.

"Amido-compounds of the platinic chloroammines." By B. E. Dixon.

"The relative stability of copper derivatives of β-diketo-compounds." By T. S. Moore and (Miss) M. W. Young.

"Preparation of 2-phenylquinoline from 2-nitrobenzylideneacetophenone." By R. J. W. Le Fèvre and J. Pearson.

"The bromination of β-naphthylamine." By F. Bell.

"Cæsium polybromides." By I. W. H. Harris.

"The salt-forming characteristics of doubly- and singly-linked elements of the oxygen group. Part IV. Oxonium phosphates of the carbonyl group." By J. W. BAKER.

"The salt-forming characteristics of doubly- and singly-linked elements of the oxygen group. Part V. The carbonyl group in derivatives of the type $CH_2Ph{\cdot}COR$." By J. W. BAKER and L. HEY.

"The salt-forming characteristics of doubly- and singly-linked elements of the oxygen group. Part VI. The rotation of camphor in strong mineral acids." By J. W. BAKER.

"Synthesis of alkylphenanthrenes. Part V. 9-Methyl-, 1 : 9-dimethyl-, and 1 : 2 : 8-trimethyl-phenanthrenes." By R. D. HAWORTH and C. R. MAVIN.

"A study of the polyhalides. Part IV. Reactions in the absence of a solvent." By H. W. CREMER and D. R. DUNCAN.

"The alkaloids of *Picralima klaineana*, Pierre. Part II." By T. A. HENRY.

"The dimorphism of certain aliphatic compounds. Part III. Ethyl margarate." By J. W. C. PHILLIPS and S. A. MUMFORD.

"The dimorphism of certain aliphatic compounds. Part IV. The ethyl esters." By S. A. MUMFORD and J. W. C. PHILLIPS.

"The reaction between 2-picoline and aromatic aldehydes." By B. D. SHAW and E. A. WAGSTAFF.

"The nitration of the β-phenylethylpyridines and related compounds. Part I." By B. D. SHAW and E. A. WAGSTAFF.

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"The complete optical resolution of chloroiodomethanesulphonic acid." By J. READ and (MISS) A. M. MCMATH.

"The propagation of flame in electric fields. Part II. The effects of transverse fields." By E. M. GUENAULT and R. V. WHEELER.

"The rearrangement of ortho-amino-sulphones." By L. A. WARREN and S. SMILES.

"The two-component salt mixtures of lead nitrate with thallium or silver nitrate." By H. M. GLASS, K. LAYBOURN, and W. M. MADGIN.

"Studies in electrolytic oxidation. Part II. Further experiments on the electrolytic oxidation of sodium thiosulphate." By S. GLASSTONE and A. HICKLING.

"Autoxidation of leucomethylene blue." By H. KING.

"4-Nitro-5-(3-pyridyl) pyrazole, a new oxidation product of nicotine. Part II. Methylation products." By H. KING.

"Reactivity of peri-substituted naphthalenes. Part II. The replacement of halogen in 8-halogenated-1-naphthoic acids

and in ortho-halogenated benzoic acids." By H. G. RULE and A. J. G. BARNETT.

"The thioper-rhenates." By H. V. A. BRISCOE, P. L. ROBINSON, and E. M. STODDART.

"The oxidation of carbonyl sulphide." By C. E. H. BAWN.

"Studies in the composition of coal. The constitution of the ulmins." By F. HEATHCOTE and R. V. WHEELER.

"Applications of thallium compounds in organic chemistry. Part VIII. Molecular association of dialkyl thallium chelate compounds." By E. R. WILTSHIRE and R. C. MENZIES.

"The reduction and hydrolysis of *ortho*-, *meta*-, and *para*-nitrophenetoles." By D. H. RICHARDSON and F. W. SMITH.

"Emulsion systems containing phenols, water, and gelatin." By R. M. WOODMAN.

"Thermionic potentiometer for the measurement of p_H." By A. E. J. VICKERS, J. A. SUGDEN, and R. A. BELL.

"Note on the filling of manometers." By M. Q. DOJA.

"The ignition of gases. Part VIII. The ignition of turbulent mixtures by the secondary electric discharge." By R. V. WHEELER.

"The stereoisomeric 2 : 3 : 5 : 6-tetramethylpiperazines. Part IV." By F. B. KIPPING.

"Syntheses of glucosides. Part IX. The synthesis of a bioside which is believed to be identical with violutoside." By A ROBERTSON and R. B. WATERS.

"Note on a supposed anomaly among the platotetrammines." By H. D. K. DREW and G. H. WYATT.

"The chemistry of resin acids. Part II. A synthesis of 1-methyl-7-*iso*propylphenanthrene (retene)." By J. C. BARDHAN and S. C. SENGUPTA.

"The benzoyl derivatives of indigotin." By E. HOPE and D. RICHTER.

"Derivatives of 1 : 2 : 3 : 4-tetrahydroxybenzene. Part II." By W. BAKER, A. W. W. KIRBY, and (MISS) L. V. MONTGOMERY.

"Kinetics of the reaction between potassium dichromate and alkali." By D. T. LEWIS and L. J. HUDLESTON.

"*p*-Phenoxyphenyldichlorophosphine." By W. C. DAVIES and C. J. O. R. MORRIS.

"The magnitude of the rotatory powers of the lævorotatory chlorides obtained by the decomposition of lævo-ethyl phenylchloroformoxyacetate and lævo-β-octylchloroformate in the presence of solvents. The origin of the partial loss of rotatory power which occurs." By (MISS) M. B. HARFORD, J. KENYON, and H. PHILLIPS.

"The ultra-violet absorption spectra of phosphine, arsine, and stibine." By G. H. CHEESMAN and H. J. EMELÉUS.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. A BALLOT WAS HELD AT THE ORDINARY SCIENTIFIC MEETING ON OCTOBER 20th, 1932. (See page 67.)

KENNEDY, JOSEPH, 39, Polwarth Gardens, Edinburgh. British. Chemist. B.Sc. (Edinburgh 1930). Research Assistant (Oct. 1930–Dec. 1931) to the Chemotherapy Committee of the Dept. of Scientific and Industrial Research. At present University Assistant in the Dept. of Medical Chemistry, Edinburgh University. (*Signed by*) George Barger, Edgar Stedman, C. P. Stewart.

MARTIN, AUSTIN RAYMOND, 13, Braemar Place, Aberdeen. British. University Assistant, University of Aberdeen. B.Sc., Ph.D. (London). "Heats of Dissociation of some Strong Electrolytes in Benzonitrile and their Calculation from Molecular Structure," *Phil. Mag.*, 1929, **8**, 547. "Effect of a Permanent Electrical Dipole on the Internal Latent Heat of Vaporisation of a Liquid," *ibid.*, 1930, **9**, 422. "Water Softening: some Properties of Certain Base-Exchange Materials," *J. Soc. Chem. Ind.*, 1930, **49**, 389. "Electrical Conductivities in Benzonitrile: Evidence for the Incomplete Dissociation of Strong Electrolytes," *J.C.S.*, 1928, 3270. "Electrical Conductivity of Tetraethylammonium Iodide in Benzonitrile," *ibid.*, 1930, 530. (*Signed by*) Alex. Findlay, Francis W. Gray, T. Harold Reade.

MORRIS, OWEN, 72, Chapel Lane, Headingley, Leeds. British. Analyst. 1924–1926, Chemist's assistant, Pemberton Colliery Co., Ltd., nr. Wigan, Lancs.; 1926–1931, Assistant Chemist, Robin Hood Coke Works, nr. Wakefield, Yorks.; 1931 to present time, Asst. Analyst H.M. Dept. of Scientific and Industrial Research (Stationed at Physical and Chemical Coal Survey Laboratory, The University, Leeds). (*Signed by*) Thomas W. Evans, Wilfred Harrison, E. B. Naylor.

MÜKHOPADHYAY, SUNIL COOMAR, 112, Gower St., W.C. 1. Bengali. Student, King's College. B.Sc. (Honours); Llay Gold Medallist, University of Rangoon. At present a research student in Organic Chemistry at King's College. Desire to have access to the Chemical Society Meetings, to receive the *Journal*, etc. (*Signed by*) Samuel Smiles, L. A. Warren, K. C. Roberts, A. J. Allmand.

STEPHENS, AUGUSTUS, St. Bartholomew's Hospital, E.C. 1. British. Medical Student (London Univ.). Engaged on original research into the chemical constituents of cunane (with Prof. H. Hartridge and Dr. R. West). (*Signed by*) W. H. Hurtley, G. Discombe, H. Gordon Reeves.

TSUDA, MIKIO, Ōhyo-kagaku, Kôtô-kôgyo gakko, Ohka-cho, Yokohama, Japan. Japanese. Prof. at Yokohama Higher Tech. College. Rigakushi (Tokyo Imp. Univ.). Since 1920, occupied above position in Applied Chem. Dept. (*Signed by*) Riko Majima, Hiroshi Nomura, Harusada Suginome.

ADDITIONS TO THE LIBRARY

I. *Donations.*

ALEMBIC CLUB REPRINTS—No. 20. Prout's hypothesis. Papers by WILLIAM PROUT (1815–16), J. S. STAS (1860), and C. MARIGNAC (1860). Edinburgh 1932. pp. 58. 2*s.* 6*d.* net. (*Recd.* 14/8/32.)
From the Secretary.

ALLGEMEINE OEL- UND FETT-ZEITUNG. Year XXIX, etc. Berlin 1932 +. (*Reference.*)
From the Bureau of Chemical Abstracts.

ANFILOGOFF, NICHOLAS LIONEL. Viscosity of gases at high temperatures. London 1932. pp. ix + 420. ill. (*Reference.*) [In mimeograph form.]
From the Author.

BARRY, THOMAS HEDLEY. Natural varnish resins. London 1932. pp. xii + 294. ill. 42*s.* net. (*Recd.* 20/10/32.)

BERGLUND, TORKEL. Metallographers' handbook of etching. Translated by WILLIAM HOUGHTON DEARDEN. London 1931. pp. x + 183. ill. 12*s.* 6*d.* net. (*Recd.* 14/8/32.)
From Dr. E. F. Armstrong.

BRITISH DRUG HOUSES. The B.D.H. book of A.R. standards. 2nd edition. London (1932). pp. xii + 194. (*Reference.*) 2*s.* 6*d.* net.
From the Director.

DEBYE, PETER. [Editor.] The structure of molecules. Translation by WINIFRED M. DEANS. London 1932. pp. xii + 190. ill. 15*s.* net. (*Recd.* 8/9/32.)
From the Publishers: Messrs. Blackie & Sons.

DROIT, SIMONE. Recherches sur la graine et l'huile de purghère ou pignon d'Inde (*Jatropha Curcas* L.). Laval 1932. pp. viii + 128. ill. (*Recd.* 23/6/32.)
From Dr. E. Lewkowitsch.

ENGEL, NIELS. Untersuchungen über die Stahlhärtung. København 1931. pp. 190 + 8 plates. 10 *Kr.* (*Recd.* 19/7/32.)
From the Faraday Society.

FEDERAZIONE NAZIONALE FASCISTA INDUSTRIE CHIMICHE ED AFFINI. L'Industria Chimica. "Il notiziario chimico-industriale." Year VII, etc. Roma 1932 +. (*Reference.*)
From the Editor.

FISHENDEN, MARGARET, and SAUNDERS, OWEN A. The calculation of heat transmission. London 1932. pp. xii + 280. ill. 10*s.* net. (*Recd.* 5/7/32.)
From the Department of Scientific and Industrial Research.

GRIMSEHL, E. A textbook of physics. Edited by R. TOMASCHEK. Vol. I. Mechanics. Translated by L. A. WOODWARD. London 1932. pp. xii + 434. ill. 15*s.* net. (*Recd.* 8/9/32.)
From the Publishers: Messrs. Blackie & Sons.

HEDGES, ERNEST SYDNEY. Liesegang rings and other periodic structures. London 1932. pp. viii + 122. ill. 10*s.* 6*d.* net. (*Recd.* 29/6/32.)

—— Protective films on metals. (Monographs on Applied Chemistry.) London 1932. pp. xii + 276. ill. 15*s.* net. (*Recd.* 29/6/32.) From the Publishers: Messrs. Chapman & Hall.

INDIA. *Society of Biological Chemists.* Biochemical and allied research in India in 1931, etc. Bangalore [1932] +. (*Reference.*) From the Society.

KINGZETT, CHARLES THOMAS. Chemical encyclopædia: a digest of chemistry and its industrial applications. 5th edition. London 1932. pp. viii + 1014. ill. (*Reference.*) 40*s.* net. From the Author.

KRÄNZLEIN, GEORG. Aluminiumchlorid in der organischen Chemie. 2nd edition. Berlin 1932. pp. 143. *M.* 12. (*Recd.* 7/10/32.) From the Author.

MANUFACTURING CHEMIST, THE, and pharmaceutical, cosmetic, and perfumery trade journal. Vol. III, etc. London 1932 +. (*Reference.*) 10*s.* per annum. From the Publishers: Messrs. Leonard Hill.

MARSHALL, ARTHUR. Explosives: their history, manufacture, properties, and tests. 2nd edition. Vol. III. London 1932. pp. xvi + 286. ill. 42*s.* net. (*Recd.* 22/9/32.) From the Author.

PIRIA, RAFFAELE. Lavori scientifici e scritti vari. Collected by DOMENICO MAROTTA. Roma 1932. pp. viii + 638. ill. (*Recd.* 16/7/32.) From Professor D. Marotta.

PRESCOTT, FREDERICK. Modern chemistry. The romance of modern chemical discoveries. London 1932. pp. xiv + 370. ill. 12*s.* 6*d.* net. (*Recd.* 28/6/32.)

From the Publishers: Messrs. Sampson Low, Marston & Co.

REALE ACCADEMIA D'ITALIA. *Fondazione Alessandro Volta.* Atti del convegni. I. Convegno di fisica nucleare, 1931. Roma 1932. pp. 174. ill. (*Reference.*) *L.* 15. From the Academy.

SEMERANO, GIOVANNI. Il polarografo. Sua teoria e applicazioni. Padova 1932. pp. viii + 206. ill. *L.* 16. (*Recd.* 4/8/32.) From the Author.

SERONO, CESARE, and CRUTO, ALFONSO. Manuale di analisi chimica. 2nd edition. Torino 1932. pp. xvi + 483. ill. *L.* 40. (*Recd.* 22/6/32.) From the Authors.

SIMONSEN, JOHN LIONEL. The terpenes. Vol. II. The dicyclic terpenes, sesquiterpenes, and their derivatives. Cambridge 1932. pp. xii + 628. 35*s.* net. (*Recd.* 14/9/32.)

From the Syndics of the Cambridge University Press.

SOCIÉTÉ CHIMIQUE DE ROYAUME DE YOUGOSLAVIE. Bulletin. Vol. II, etc. Beograd 1931 +. (*Reference.*) From the Society.

WORLD POWER CONFERENCE. *British National Committee.* Power and Fuel Bulletin. No. 9, etc. London 1931 +. (*Reference.*)
From the Committee.

ZEITSCHRIFT FÜR VITAMINFORSCHUNG zugleich Zentralblatt für Vitaminologie und verwandte Ernährungsprobleme. Vol. I, etc. Bern 1932 +. (*Reference.*)
From the Bureau of Chemical Abstracts.

II. *By Purchase.*

BOËTIUS, MAX. Über die Fehlerquellen bei der mikroanalytischen Bestimmung des Kohlen- und Wasserstoffes nach der Methode von FRITZ PREGL. Berlin 1931. pp. 114. *M.* 7. (*Recd.* 8/7/32.)

BÖHM, EGON. Die Fabrikation der Fettsäuren. Mit einem theoretischen Teil: Chemie und physikalische Chemie der Fettsäuren und ihrer Darstellung. (By E. LEO LEDERER.) Stuttgart 1932. pp. xvi + 334. ill. *M.* 35. (*Recd.* 22/6/32.)

CLUSIUS, KLAUS. Kettenreaktionen. (Fortschritte der Chemie, Vol. XXI.) Berlin 1932. pp. iv + 73. ill.

DRUCKER, CARL, and FINKELSTEIN, ALEXIS. Galvanische Elemente und Akkumulatoren. Leipzig 1932. pp. viii + 426. ill. *M.* 36. (*Recd.* 8/7/32.)

FREUDENBERG, K. (Editor.) Stereochemie. Eine Zusammenfassung der Ergebnisse, Grundlagen und Probleme. Part 1, etc., Leipzig 1932 +.

HASELHOFF, EMIL. Grundzüge der Rauchschadenkunde. Anleitung zur Prüfung und Beurteilung der Einwirkung von Rauchabgängen auf Boden und Pflanzen. Berlin 1932. pp. viii + 168. ill. *M.* 11. (*Recd.* 8/7/32.)

JOHNSTONE, HENRY FRASER. The corrosion of power plant equipment by flue gases. A report of an investigation. Urbana 1931. pp. 120. ill. 65 *c.* (*Recd.* 12/8/32.)

KASSLER, J. Untersuchungsmethoden für Roheisen, Stahl und Ferrolegierungen unter besonderer Berücksichtigung der legierten Stähle. (Die chemische Analyse, Vol. XXXI.) Stuttgart 1932. pp. xiv + 158. ill. (*Reference.*)

MEIDINGER, WALTER. Die theoretischen Grundlagen der photographischen Prozesse. (Handb. wiss. angew. Photographie, Vol. V.) Wien 1932. pp. x + 514. ill. *M.* 59.80. (*Recd.* 8/7/32.)

MITTASCH, ALWIN, and THEIS, ERICH. Von Davy und Döbereiner bis Deacon, ein halbes Jahrhundert Grenzflächenkatalyse. Berlin 1932. pp. 279. ill. *M.* 18.50. (*Recd.* 8/7/32.)

NOWAK, ALFRED. Chemische Holzverwertung. 4 Aufl. JOSEF BERSCH: "Die Verwertung des Holzes auf chemischem Wege." Wien 1932. pp. viii + 304. ill. *M.* 10. (*Recd.* 8/7/32.)

ROBINSON, ROBERT. Versuch einer Elektronentheorie organisch-chemischer Reaktionen. Translated by M. WRESCHNER. (Sammlung, N.F. Heft 14.) Stuttgart 1932. pp. 76. (*Reference.*)

RUNGE, FRANZ. Organometallverbindungen. Part I. Organomagnesiumverbindungen. (Chemie in Einzeldarstellungen, Vol. XVI.) Stuttgart 1932. pp. xii + 328. (*Recd.* 20/8/32.)

THILO, ERICH. Die Valenz der Metalle Fe, Co, Ni, Cu und ihre Verbindungen mit Dioximen. (Sammlung, N.F. Heft 13.) Stuttgart 1932. pp. 71. ill. (*Reference.*)

III. *Pamphlets.*

AIR MINISTRY. *Aeronautical Research Committee.* Reports and Memoranda. No. 1362. Detonation, mineral lubricating oils, and blended fuels. By R. O. KING and H. Moss. London 1931. pp. 11. ill.

—— —— —— No. 1374. Report on the oxidation characteristics of fuel vapours with regard to engine detonation. By ERNEST [WALTER JOHN] MARDLES. London 1931. pp. 27. ill.

—— —— —— No. 1385. The mode of deformation of a single crystal of silver. By HERBERT JOHN GOUGH and H. L. COX. London 1931. pp. 13. ill.

—— —— —— No. 1386. The influence of titanium tetrachloride on cast aluminium alloys. By WALTER ROSENHAIN, J. D. GROGAN, and T. H. SCHOFIELD. London 1931. pp. 10. ill.

—— —— —— No. 1387. Gas removal and grain refinement in aluminium alloys. By WALTER ROSENHAIN, J. D. GROGAN, and T. H. SCHOFIELD. London 1931. pp. 8. ill.

—— —— —— No. 1390. The protection of magnesium alloys against corrosion. By H. SUTTON and LAURENCE FRANCIS LE BROCQ. London 1931. pp. 22.

—— —— —— No. 1431. The age-hardening of some aluminium alloys of high purity. By MARIE L. V. GAYLER and G. D. PRESTON. London 1932. pp. 19. ill.

ARAKATSU, B., and KIMURA, K. On some peculiar phenomena of the electrodeless ring discharge through hydrogen in a long tube. (From the *Mem. Fac. Sci. Agric., Taihoku Imp. Univ.*, 1932, 5.) ill.

ARNFELT, H. On the formation of layer-lattices. (From the *Arkiv Mat. Astron. Fysik*, 1932, 23B.) ill.

AUSTRALIA, COMMONWEALTH OF. *Department of Defence.* The laboratories of the Munitions Supply Board. Melbourne 1932. pp. 20. ill.

BRITISH STANDARDS INSTITUTION. British standard specification for the identification of chemical pipe lines. London 1932. pp. 7. ill.

British Standards Institution. British standard specifications for xyloles. London 1932. pp. 29. ill.

Chatterjee, N. N. Action of solvents on Indian coal. (From the *Q.J. Geol. Min. Met. Soc. India*, 1929, **2**.)

—— On the occurrence of sulphur in the tertiary coals of Assam. (From the *Q.J. Geol. Min. Met. Soc. India*, 1931, **3**.)

Di Delupis, Serafino Dojmi. Ricerche sperimentali col metodo fisiologico-matematico di Mitscherlich sull'azione dei fertilizzanti. (From the *Ann. R. Staz. Chim. Agrar. Sperim.*, 1931, [ii], **13**.) ill.

Federated Malay States. *Institute for Medical Research.* Bulletin No. 4 of 1930. The calcium and phosphorus content of the blood and the creatinine coefficient of the urine of some inhabitants of Malaya. By Francis Eric Byron. Kuala Lumpur 1930. pp. ii + 4.

—— —— Bulletin No. 2 of 1931. Studies in vitamin B. 1. (The antineuritic vitamin.) Part I. The concentration of vitamin B. 1 from rice polishings. By Ian Alexander Simpson. Kuala Lumpur 1931. pp. ii + 10. ill.

Gelderen, Mozes Joseph van. Reacties van 4-diphenylisocyanaat met alcoholen en aminoverbindingen. Leiden 1932. pp. xii + 99.

Hadfield, Sir Robert Abbott. Notes on a research regarding Faraday's "steels and alloys." London 1931. pp. 19. ill.

Hall, Archibald John. The behaviour of dyestuff particles within cellulose materials. (From *Cellulose*, 1930, **1**.)

Imperial Institute. The mineral industry of the British Empire and foreign countries. Lithium. London 1932. pp. 27.

Indian Lac Research Institute. A report on the state of lac cultivation and general condition of the lac industry in Burma, 1931. By Dorothy Norris. Ranchi 1931. pp. 26.

—— Bulletin No. 5. Humidity and storage of button lac. By R. W. Aldis. Ranchi 1932. pp. 4.

—— Bulletin No. 7. Orpiment and the iodine value of shellac. By M. Rangaswami and R. W. Aldis. Ranchi 1932. pp. 4.

—— Bulletin No. 8. The iodine value of shellac. By R. W. Aldis. Ranchi 1932. pp. 5.

—— Bulletin No. 9. Comparative studies of lac hosts with special reference to *Acacia Catechu* and *Cassia florida*. By A. K. Thakur. Ranchi 1932. pp. 8.

—— Research Note No. 1. A note on bleaching shellac. By N. Narisiṃha Murty and R. W. Aldis. Ranchi 1932.

—— Research Note No. 2. A note on determination of shellac fluidity. By R. W. Aldis. Ranchi 1932.

—— Research Note No. 3. A note on the swelling of shellac. By R. W. Aldis. Ranchi 1932.

FORTHCOMING MEETINGS OF THE SOCIETY.

Thursday, November 3rd, at 8 p.m.

Ordinary Scientific Meeting at which the following papers will be read :—

"Specific heats of aqueous solutions of formic, acetic, propionic, and *n*-butyric acids." By C. R. BURY and D. G. DAVIES.

"Studies in electrolytic oxidation. Part I. The electrolytic oxidation of sodium thiosulphate at a platinum anode." By S. GLASSTONE and A. HICKLING.

"Studies in electrolytic oxidation. Part II. Further experiments on the electrolytic oxidation of sodium thiosulphate." By S. GLASSTONE and A. HICKLING.

"The passivity of metals. Part VII. The specific function of chromates." By T. P. HOAR and U. R. EVANS.

"The automatic control and automatic recording of hydrogen-ion concentration by means of the glass electrode." By C. MORTON.

Thursday, November 17th, at 8 p.m.

Discussion on "Combustion of Gases in Electric Discharges" to be opened by Professor G. Ingle Finch, M.B.E.

Friday, November 25th, at 5.30 p.m.

Fourth Liversidge Lecture, entitled "Physical Atomic Weights," to be delivered by Dr. F. W. Aston, F.R.S., in the Medical Lecture Theatre of the University of Birmingham, and not in the Chemistry Lecture Theatre as previously announced.

TECHNOLOGY DEPT.

PROCEEDINGS
OF THE
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 3rd, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death on December 8th, 1931, of Alexander Smith, who was elected a Fellow of the Society on June 18th, 1925.

It was announced that the Council had appointed the following Representatives :—

Bureau of Chemical Abstracts :—Professor C. S. Gibson, Mr. A. J. Greenaway, Dr. J. T. Hewitt, and Professor G. T. Morgan, together with Mr. Emile Mond (Treasurer) ex officio.

Federal Council for Chemistry :—Professor C. S. Gibson, Sir William J. Pope, and Professor J. F. Thorpe.

British Editorial Board of the Journal of Physical Chemistry :—Mr. E. J. Bowen, Professor W. E. Garner, and Professor T. M. Lowry.

Forms of Recommendation for Fellowship were read for the first time in favour of :—

Desmond Cannon Brookes, B.A., 56, St. James's Street, S.W.1.

Arnold Blatchford David Cassie, M.A., B.Sc., Ph.D., "Penponds," North Drive, Ruislip, Middlesex.

John Leonard D'Silva, Ph.D., 6, Dornton Road, S.W. 12.

Bertram Garforth, Ph.D., 3, Eton Road, West Bridgford, Notts.

Colin Leslie Hewett, M.Sc., 28, Tresco Road, Peckham Rye, S.E. 15.

Edmund Joseph Leeming, M.A., The Oratory School, Caversham, Reading.

Arthur Charles Cecil Newman, B.Sc., A.R.C.S., D.I.C., St. George's School, Harpenden, Herts.

Bhartipudy Srinivasa Vira Raghava-Rao, B.A., M.Sc., 23, Parliament Hill, London, N.W. 3.

John Samuel Wignall, Ph.D., 30, Kingsley Avenue, Hillmorton Paddox, Rugby.

Ralph James Wilkins, B.Sc., 17, Ambrose Avenue, Golders Green, N.W. 11.

The following papers were read :—

"Specific heats of aqueous solutions of formic, acetic, propionic, and *n*-butyric acids." By C. R. BURY and D. G. DAVIES.

"Studies in electrolytic oxidation. Part I. The electrolytic oxidation of sodium thiosulphate at a platinum anode." By S. GLASSTONE and A. HICKLING.

"Studies in electrolytic oxidation. Part II. Further experiments on the electrolytic oxidation of sodium thiosulphate." By S. GLASSTONE and A. HICKLING.

"The passivity of metals. Part VII. The specific function of chromates." By T. P. HOAR and U. R. EVANS.

"The automatic control and automatic recording of hydrogen-ion concentration by means of the glass electrode." By C. MORTON.

Ordinary Scientific Meeting, Thursday, November 17th, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on November 12th, 1932, of Sir Dugald Clerk, K.B.E., F.R.S., who was elected a Fellow of the Society on May 20th, 1875.

The PRESIDENT announced that :—

1. The next Discussion will be opened by Professor I. M. Heilbron, D.S.O., F.R.S., on Thursday, December 15th, 1932, at 8 p.m., and that the title of the Discussion had been altered to "The Chemistry of the Sterols and Bile Acids."

2. An Extraordinary General Meeting of the Society will be held on Friday, December 16th, 1932, at 5 p.m. to consider certain alterations in the Bye-Laws proposed by the Council.

3. In accordance with the intimation contained in the notice sent to Fellows on September 12th, the Council has now appointed Local Representatives (see p. 95).

Forms of Recommendation for Fellowship were read for the first time in favour of :—

Leonard Francis Broadway, Ph.D., Clare College, Cambridge.
Geoffrey Broughton, B.Sc., 117, Peterborough Road, Leyton, E. 10.
William Gunn Burrell, M.A., 1, Colebrook Place, Glasgow, W. 2.
Benjamin Collie, B.Sc., 31, Landale Road, Peterhead, Aberdeenshire.
John Stanley Herbert Davies, B.A., M.Sc.Tech., Ph.D., "Woodland," Crescent Road, Cheetham Hill, Manchester.
Wilfred James Cecil Dyke, Ph.D., National Institute for Medical Research, Hampstead, N.W. 3.
Kenneth Kershaw Etchills, M.Sc., A.I.C., 413, Bellegrove Road, Welling, Kent.
Alexander Oscar Gettler, M.A., Ph.D., 32, Waverly Place, New York City, U.S.A.
Subimal Chandra Ghosal, M.Sc., c/o Messrs. Thomas Cook & Son, Ltd., Berkeley Street, W. 1.

John Grindley, Ph.D., A.I.C., 12, Lowther Road, Barnes, S.W. 13.
Stanley Reginald William Martin, B.Sc., A.R.C.S., 24, Goldie House, Hazellville Road, N. 19.
William Pugh, B.Sc., Ph.D., F.I.C., Chemistry Department, University of Cape Town, Rondebosch, South Africa.
John Joseph Ritter, M.A., Ph.D., 92, Glen Road, Yonkers, New York, U.S.A.
Kenneth Sams, A.R.C.S., 36, Fernhurst Road, Fulham, S.W. 6.
James Wallace, B.A., 12, St. Mark's Terrace, Mansfield, Notts.

The following form of recommendation has been accepted by the Council under Bye-Law I (2) :—

Julius Arthur Nieuwland, Prof., B.A., Sc.D., Ph.D., Catholic University of America, Notre Dame, Ind., U.S.A.

A Discussion on "Combustion of Gases in Electric Discharges" was opened by Professor G. Ingle Finch, and continued by Mr. H. T. Tizard, Professor E. K. Rideal, Mr. A. C. G. Egerton, Professor W. E. Garner, and Professor W. A. Bone.

THE LIBRARY.

The Library will be closed for the Christmas Holidays from Friday, December 23rd, at 1 p.m., until Thursday, December 29th, at 10 a.m.

List of Papers, or Abstracts thereof, received between October 20th and November 17th, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Ammines. Part X. Cobaltous and cupric compounds from tris-(β-hydroxyethyl)-amine. New method of formation of ammino-cupric salts." By J. C. Duff and E. H. Steer.

"The dismutation of some disulphides. Part II." By J. L. D'Silva and E. W. McClelland.

"Synthetical experiments on the nature of betanin and related nitrogenous anthocyanins. Part II." By (Mrs.) A. M. Robinson and R. Robinson.

"Studies in insulin. Part II. The electrometric titration of normal, inactivated, and reactivated insulin." By E. A. Harvey, F. O. Howitt, and E. B. R. Prideaux.

"The preparation of diphenyl-3-aldehyde." By C. W. Shoppee.

"Symmetrical triad prototropic systems. Part IX. The influence of polynuclear aryl groups upon mobility and equilibrium in the αγ-diarylmethyleneazomethine system." By C. W. Shoppee.

"Comparison of the directive powers of elements having consecutive atomic numbers. Part IV. Nitration of 2 : 4 : 6-triphenylpyrylium perchlorates." By (Mrs.) C. G. Le Fèvre and R. J. W. Le Fèvre.

"Nitration of di-*p*-tolyl- and di-*p*-chlorophenylphenylpyrylium perchlorates." By (Miss) H. E. Johnstone and R. J. W. Le Fèvre.

"Studies of electrolytic polarisation. Part X. Ammines of copper, silver, zinc, and cadmium." By S. Glasstone.

"The action of ethylmagnesium bromide on thallous chloride and on thallous ethoxide." By R. C. Menzies and (Miss) I. S. Cope.

"Catalytic reduction of aromatic nitro-compounds." By S. J. Green.

"The hydrolysis of acetonesemicarbazone and of acetoxime. Part I. The partial vapour pressure of acetone in aqueous solutions. Part II. Measurement of the hydrolytic constant of acetonesemicarbazone and the calculation of the heat of the reaction between acetone and semicarbazide." By J. E. W. Rhodes.

"Depression of the melting point of *r-iso*borneol, *l*-borneol, and *d*-camphoroxime by various substances." By T. S. Patterson, (Miss) Janet H. Blackwood, and J. M. Stewart.

"Bromination of 2-nitro-*p*-cresol." By W. O. Kermack and W. T. Spragg.

"Researches in the menthone series. Part X. The complete optical resolution of *dl*-neomenthol by means of *l*-menthol." By J. Read and W. J. Grubb.

"The rates of detonation in carbon monoxide–oxygen mixtures." By C. Campbell, C. Whitworth, and D. W. Woodhead.

"The formation of organo-metalloidal compounds by micro-organisms. Part I. Trimethylarsine and dimethylethylarsine." By F. Challenger, (Miss) C. Higginbottom, and L. Ellis.

"Conditions for estimating antimony by the permanganate method. Potentiometric titrations." By W. Pugh.

"Studies of the boron–carbon linkage. Part II. The stability of *n*-propylboric acid. The nitration of *p*-carboxyphenylboric acid." By A. D. Ainley and F. Challenger.

"A new synthesis of cadalene." By E. de B. Barnett and J. W. Cook.

"The viscosity of nitrobenzene." By W. M. Cox and J. H. Wolfenden.

"The condensation of chloral with the tolyl and nitrophenyl ureas." By F. D. Chattaway, G. M. T. Kerr, and C. G. Lawrence.

"The influence of acid concentration on the oxidation potential of mixtures of ferric and ferrous sulphates in sulphuric acid solution." By T. J. GLOVER.

"Oxidation of quinol with ammonium persulphate." By J. W. DODGSON.

"The rotatory dispersion of organic compounds. Part XXI. The rotatory dispersion and circular dichroism of aldehydic sugars." By T. M. LOWRY and H. HUDSON.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 1st., 1932.

BELL, RONALD PERCY, "Willowfield," Courthouse Road, Maidenhead. British. Investigator and Teacher of Chemistry. B.A., B.Sc. (Oxon.). Papers on theory of solution and chemical kinetics: *J. Faraday Soc.*, 1927, p. 396; *J. Phys. Chem.*, 1928, p. 882 and 1929, p. 99; *Z. physikal. Chem.* [*A*], 1930, p. 20; *J. Amer. Chem. Soc.*, 1931, p. 2478; *Trans. Faraday Soc.*, 1931, p. 797; *J.C.S.*, 1931, p. 1371; 1932, p. 338. (*Signed by*) J. H. Wolfenden, C. N. Hinshelwood, E. J. Bowen.

BROOKES, DESMOND CANNON, 56, St. James's Street, S.W. 1, and Suffolk House, Frinton-on-Sea. British. Chemical Engineer. B.A. (Cantab.), Hons. Natural Sciences; B.A., Hons. Natural Sciences. Graduate Member of Institution of Chemical Engineers. Former Vice-President of Cambridge University Chemical Society. At present engaged upon the technical control of the applications of sodium aluminate to water treatment and purification. (*Signed by*) Eric K. Rideal, R. G. W. Norrish, H. McCombie.

CASSIE, ARNOLD BLATCHFORD DAVID, "Penponds," North Drive, Ruislip, Middlesex. British. Research Student. M.A. (Hons. Maths.), B.Sc. (Hons. Physics) [Edinburgh]; M.A. (Hons. Physics) [Cambridge]; Ph.D. (Chemistry) [London]. Publications: "Investigations in the Infra-Red Region of the Spectrum," Parts I–VII (*Proc. Roy. Soc.*, 1930, [A], **130**, 133 and 142; *ibid.*, 1931, **132**, 236 and 252; *ibid.*, 1932, **135**, 375; *ibid.*, 1932, **137**, 622; *ibid.*, Nov. or Dec. 1932). Other papers relating to Infra-Red (*Trans. Faraday Soc.*, 1930, **36**, 197), etc. (*Signed by*) F. G. Donnan, C. R. Bailey, W. Rogie Angus.

CLARKE, WALTER, 296, Katherine Road, Forest Gate, E. 7. British. Works Chemist. Special B.Sc., 1st Class Hons. Chemistry, London. Asst. Chemist at Messrs. Batchelor Robinson & Co., Ltd., Llanelly. Works Chemist at Messrs. The New London Electron Works, Ltd., E. 6. (*Signed by*) Frank Collingridge, George Dean, Frank Laurence Allen.

CULHANE, KATHLEEN, 42, Sutton Court, W. 4. British. Chemist. B.Sc., London, Royal Holloway College. Publications: *Biochem. J.*, 1927, Vol. XXI, p. 1015; 1929, Vol. XXIII, pp. 384, 1010; *Journ. Biological Chem.*, 1930, Vol. LXXXVI, p. 113; *Quarterly Journ. Pharm.*, 1928, Vol I, p. 517. (*Signed by*) Charles Alex. Hill, Francis H. Carr, T. S. Moore.

CUTHILL, RONALD, 420, Livingstone Road, Bolton Villas, Bradford. British. Lecturer in Physical Chemistry. B.Sc., 1st Class Hons. Chemistry, M.Sc., Ph.D. (Leeds). Research Chemist, British Silk Research Association,

University, Leeds, 1926–1929. Lecturer in Physical Chemistry, Bradford Technical College since 1929. (*Signed by*) H. M. Dawson, C. G. Lyons, William S. Denham.

DAVIES, DAVID GWYNNE, "Yardley," South Road, Aberystwyth, Cardiganshire. British. Junior Assistant Lecturer. B.Sc., Ph.D. (Wales). Junior Assistant Lecturer at University College of Wales, Aberystwyth. "The Partial Specific Volume of Potassium *n*-Octoate in Aqueous Solution" (with Mr. C. R. Bury), *J.C.S.*, 1930, p. 2263. "Specific Heats of Aqueous Solutions of Formic, Acetic, Propionic, and *n*-Butyric Acids" (with Mr. C. R. Bury), *ibid.*, 1932, p. 2413. (*Signed by*) T. Campbell James, D. M. Williams, C. R. Bury.

D'SILVA, JOHN LEONARD, 6, Dornton Road, S.W. 12. British. Research Chemist. B.Sc., Ph.D. (London, 1931). At present engaged in research for the Asthma Research Council. "Formation of Thionaphthindoles," Part II, *J.C.S.*, 1931, p. 2972; Part III, *ibid.*, 1932, p. 227. (*Signed by*) Samuel Smiles, E. W. McClelland, L. A. Warren.

FRANCOMBE, KENNETH WALTER, Allington House, 136, Victoria Street, S.W. 1. British. Captain. Chemist, City of Birmingham Gas Dept. (1918–27). Chief Chemist, Coal Research Syndicate, Ltd. (1927–29). Chemist, Research Dept., Woodall-Duckham Cos., Ltd. (1929–32). (*Signed by*) H. M. Spiers, Frank E. Thompson, Stephen N. Wellington.

GARFORTH, BERTRAM, 3, Eton Road, West Bridgford, Notts. British. Research Chemist. B.Sc. (Col. Chem.), Leeds; Ph.D., Leeds. Research Chemist, Messrs. Boots Pure Drug Co., 1931 to date. (*Signed by*) Frank Lee Pyman, Joseph Marshall, Fredk. O. Howitt.

HADDOCK, LEONARD ARTHUR, 2, Station Road, Enfield, Middlesex. British. Analytical Chemist. B.Sc., London. First Class Hons. in Chemistry; A.I.C. by examination. Research and analytical experience with Messrs. Allen & Hanburys, Ltd. Engaged in post-graduate research. (*Signed by*) Norman Evers, Henry J. S. Sand, A. M. Ward.

HEADLAND, HENRY WILLIAM, 101, Belgrave Road, Wanstead, E. 11. British. Research Student. B.Sc., 1st Class Hons. (London). Reason: Chemical research. (*Signed by*) H. D. K. Drew, D. C. Jones, E. G. Carter, G. H. Wyatt.

HEWETT, COLIN LESLIE, 28, Tresco Road, Peckham Rye, S.E. 15. British. Research Chemist. M.Sc., London. "Beiträge zur Kenntnis der Anthracen-Derivate," *Ber.*, 1931, **64**, 1572; "The Orientation of the α-Chloroanthrones," *J.C.S.*, 1932, 506; "The Influence of Bz Substituents upon some Reactions of the Anthrones. I.," *ibid.*, 1932, 1452. (*Signed by*) E. L. Kennaway, J. W. Cook, Henry J. S. Sand, A. M. Ward.

HUTTON, HENRY MARK, jun., 23, Montpellier Crescent, New Brighton, Cheshire. British. Director. As a member of the British Launderers Research Association, I am interested in the development and application of Chemistry in the Laundry Industry. (*Signed by*) T. P. Hilditch, Thomas J. Roberts, A. E. Findley.

JENKINS, HYWEL OLIVER, 29, High Street, Gilfach Goch, nr. Bridgend, Glam. British. Research Student. B.Sc., Ph.D. (Wales). Investigations have been carried out on the freezing points of non-ionic solutions, and the results will be published shortly. (*Signed by*) L. J. Huddleston, T. Campbell James, C. R. Bury.

JEPHCOTT, CLARENCE, 198, Rosedale Heights Drive, Toronto, Canada. British subject. Research Chemist (Lister Institute). B.A., M.A., Ph.D., University of Toronto. Demonstrator in Chemistry, University of Toronto, 1923–28.

Research Associate in Physiology, University of Toronto, 1929–31. *J. Amer. Chem. Soc.*, 1928, **50**, 1189; *Trans. Roy. Soc. Canada*, 1931, Sec. V, 183; *Amer. J. Physiol.*, 1932, **100**, 285. (*Signed by*) Arthur Harden, J. Masson Gulland, Robert Robison.

KIRBY, ROLFE FAIRBANK, Highfield House, Weelsby, Grimsby, Lincolnshire. British. Analyst to Manufacturing Chemist. B.Sc. (Pass), University of Sheffield. Intention to join is to keep up with modern developments in chemical science. (*Signed by*) G. M. Bennett, S. Glasstone, Brynmor Jones.

LAWRENCE, EDWIN CHARLES HIGGINS, Organic Research Laboratories, Royal College of Science, South Kensington, S.W. 7. British. Research Student in Organic Chemistry. A.R.C.S. (London), B.Sc. (Hons. London). For three years undergraduate student in Chemistry at Royal College of Science, London (1929–32). Now post-graduate research student in Organic Chemistry at the same college. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

LEEMING, EDMUND JOSEPH, The Oratory School, Caversham, Reading. British. Schoolmaster. M.A., Cambridge. Desire to obtain the publications and use the library of the Society. (*Signed by*) Harold A. Scarborough, H. McCombie, F. B. Kipping.

LEWIS, DAVID THOMAS, 3, Pontycapel Road, Cefn Coed, Merthyr Tydfil. British. Research Student, U.C.W., Aberystwyth. First Class Honours in Chemistry at the University of Wales, Aberystwyth; B.Sc. degree. At present nearing completion of 2 years' Research scheme for the Ph.D. degree. Lewis and Hudleston, *J.C.S.*, May 1932 (in publication). Have also recently submitted another paper. (*Signed by*) L. J. Hudleston, T. Campbell James, C. R. Bury, D. M. Williams.

LINNITT, CAPT. CHARLES FREDERICK, 14, Gloucester Row, Weymouth, Dorset. British. Second Master and Senior Science Master at Weymouth Grammar School. B.Sc. (Birmingham). War Service as Divisional Gas Officer to 60th Division and Chemical Adviser to XXth Army Corps, E.E.F. Captain in Army Educational Corps (Regular Reserve of Officers). (*Signed by*) W. Vernon Lloyd, C. S. Kipping, Philip G. G. Moon.

MACARTHUR, JOHN, Schoolhouse, Annbank, Ayrshire, N.B. British. Research Fellow in Chemistry. M.A., B.Sc., Ph.D. (Glasgow). Late Carnegie Scholar. *J.C.S.*, 1932, 1669. (*Signed by*) G. G. Henderson, R. Wright, Stotherd Mitchell.

MILNER, HENRY BREWER, 4, Wycombe Gardens, Golders Green, N.W. 11, and at 92, Victoria Street, Westminster, S.W. 1. British. Consulting Petroleum Technologist. M.A. [Nat. Sci. Trip. (Chemistry, Geology, Mineralogy) Cantab.]; D.I.C. (Lond.); F.G.S.; M.Inst.P.T. Much of my work concerns the chemical and physical testing of rocks, rock-products, and particularly asphalt and allied substances in my own laboratories. (*Signed by*) Arthur Hutchinson, W. J. Pope, B. E. Dixon.

NEWMAN, ARTHUR CHARLES CECIL, St. George's School, Harpenden, Herts. British. Senior Science Master at St. George's School. B.Sc., 1st Class Hons. Chemistry, London; A.R.C.S., Chem. 1st Class; D.I.C. Carried out researches at the Royal College of Science in connection with the specific oxidation of organic compounds by means of Selenium Dioxide as a student working for a higher degree. It is hoped that papers in this connection will shortly be presented to the Chemical Society for publication. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, M. A. Whiteley.

NISBET, HUGH BRYAN, 32, Millar Crescent, Edinburgh. British. Assistant Lecturer on Chemistry, Heriot-Watt College, Edinburgh. B.Sc. (Edinburgh),

F.I.C. Have published three papers on Organic subjects. *J.C.S.*, 1927, 2081; 1928, 3121; 1929, 1901. (*Signed by*) T. Slater Price, Robt. H. Slater, W. O. Kermack.

PEARSON, JOHN, 38, Moira Road, Eltham, S.E. 9. British. Research Student. B.Sc. (1st Class Hons.). Organic Research Student at University College, London. Student Demonstrator in Dept. of Chem., Univ. Coll. (*Signed by*) C. K. Ingold, R. J. W. Le Fèvre, J. N. E. Day.

RAGHAVA-RAO, BHARTIPUDY SRINIVASA VIRA, 23, Parliament Hill, N.W. 3. British-Indian. Research Student. B.A., M.Sc. (Madras, India). Published jointly with Dr. H. E. Watson papers mainly on the Phototropy of Mercury Compounds. (*Signed by*) F. G. Donnan, R. Winstanley Lunt, S. V. Anantakrishnan.

REYNOLDS, THELMA MURIEL, Somerville College, Oxford. Australian. 1851 Science Research Scholar. B.Sc. and M.Sc., University of Sydney. Demonstrator in Organic Chemistry, University of Sydney, 1929–1932. "The Celluloses of Two Water Plants, *Ottelia Ovalifolia* (Richard) and *Eichornio crassipes* (Solms)" (with J. C. Earl), *J. Proc. Roy. Soc., N.S.W.*, 1931, **65**, 75. "A Note on the Action of Titanium Tetrachloride on Tetracetyl-β-*d*-glucosidoglycollic Ester," *ibid.* (in the press). "The Effect of a 2-*p*-Toluenesulphonyl Group on the Reactivity of the Halogen Atom of a Glucosidyl Halide," *J.C.S.*, 1931, 2626. (*Signed by*) J. C. Earl, Horace Finnemore, Charles E. Fawsitt.

ROBERTS, JOSEPH HARRY, Heaton Moor College, Heaton Moor, Stockport, Cheshire. British. Principal of above School. Inter. B.A., Diploma in Agricultural Chemistry, M.I.H. Lecturer in Agriculture in Weaverham Grammar School, Cheshire, 1903–4; late Head Master of the Grammar School, Hyde, Cheshire. (*Signed by*) E. H. Roberts, C. S. Gibson, G. G. Henderson, Emile Mond.

SHEPPARD, WILLIAM GEORGE, "The Gables," West Mark, Highbridge, Somerset. British. Chemist and Druggist. Passed the Pharmaceutical Society of Great Britain's final C and D exam., and am desirous of obtaining current literature in Research with a view of pursuing study in Chemistry further. (*Signed by*) David J. Williams, H. Lucas, P. H. Woodnoth.

SNELL, FREDERICK ROWLANDSON, Shotover, Park Avenue, Eastbourne. British. Schoolmaster. B.A. (1st Class Hons. in Chemistry); B.Sc. (both of Oxford University). Lecturer in Physical Chemistry at St. John's College, Agra, India, from 1927–32. Paper sent to Indian Chemical Soc. in 1932 on "Conductivity of Soda Zincate Solutions" (not yet published). Appointed Senior Science Master at Eastbourne College from Sept. 1932. "Reaction of Bromine with Formic Acid," *J.C.S.*, 1925, **127**, 2715. (Signed by) J. C. Smith, L. H. Briggs, D. Ll. Hammick.

WIGNALL, JOHN SAMUEL, 30, Kingsley Avenue, Hillmorton Paddox, Rugby. British. Lecturer in Chemistry. B.Sc., Ph.D. (London). Student, Technical College, Halifax. Research, Colour Research Department, Technical College, Huddersfield. Teaching, Rugby College of Technology and Arts. Five papers appear in the names of Herbert Henry Hodgson and John Samuel Wignall, *J.C.S.*, 1926, Nos. CCLXXVIII and CCCLXXVI; 1927, Nos. CLVIII and CCXCV; 1928, XLV. (*Signed by*) Herbert H. Hodgson, James Bruce, W. J. Stansfield.

WILKINS, RALPH JAMES, 17, Ambrose Avenue, Golders Green, N.W. 11. British. Research Student in Physical Chemistry. B.Sc. Special, 1st Class Hons. Chemistry, London, June 1932. (*Signed by*) J. R. Partington, H. D. K. Drew, D. C. Jones.

Forms of Recommendation for Fellowship accepted by the Council under Bye-Law I (2).

COCHRANE, FRANK CHESTER, Pretoria Hospital, P.O. Box 437, Pretoria, South Africa. British. Chief Chemist, Pretoria Hospital, Pretoria, S.A. Pharmaceutical Chemist. Lecturer in Pharmacy and Practical Dispensing at the Witwatersrand Technical Institute, Johannesburg, 1926–8. Lecturer in Chemistry and Physics at the Pretoria Technical College, Pretoria, 1928. (*Signed by*) N. F. Lovasz, Bennett A. Jacobson.

DEULOFEU, (DR.) VENANCIO, Casilla Correo 2539, Buenos Aires, Argentine Republic. Argentine. Assistant Prof. Biochemistry, University of Buenos Aires. Doctor of Chemistry (Buenos Aires). Several research papers published in the *J.C.S.*; *Anales de la Sociedad Española de Física y Química*; *Bulletin de la Société chimique de France*; etc. *J.C.S.*, 1928, 523; 1929, 225 (with R. J. Selva); 1929, 2458; 1930, 2602. (*Signed by*) E. Moles.

JOSHI, SHIAM SUNDER, Head of the Chemistry Dept., Meerut College, Meerut, India. Indian. Professor of Chemistry. D.Sc., M.Sc. (Lucknow). Papers published jointly, *J. Indian Chem. Soc.*, 1928, **5**, 300; 1932, **9**, 59. D.Sc. (Lucknow), and working as Professor of Chemistry since 1927. *J.C.S.*, 1924, **125**, 2482. (*Signed by*) N. R. Dhar, K. P. Chatterjee.

MILNE, GEOFFREY, Amani (via Tanga), Tanganyika Territory, East Africa. British. Soil Chemist. M.Sc. (Leeds). In charge of soil work at the East African Agricultural Research Station, Amani; formerly Lecturer in Agricultural Chemistry, University of Leeds. (*Signed by*) Arthur Smithells.

NARAYANA IYER, KOOVELIMADAM RAMA, Agricultural Chemist, Quilon P.O., Travancore State, India. Indian. Agricultural Chemist to the Government of Travancore. B.A. degree of the Madras University; M.Sc. degree of the State University of New Jersey, U.S.A. Two years' training and post-graduate work in the Indian Institute of Science, Bangalore, on the chemistry of oils and fats. Two years' post-graduate work in the Imperial Agricultural Research Institute, Pusa, India, on the biochemistry of peat soils. In charge of the Agricultural Research Laboratory, Travancore. No papers in *J.C.S.*, but has published papers in the *Jour. Indian Inst. Sci.*, Vol. XI., No. 3, on oils and fats; on Lignin-protein Complexes in *Jour. Wash. Acad. Sci.*, Jan. 1932. In *Soil Science*, July 1932, on "Humus nucleus." (*Signed by*) John J. Sudborough.

ROBSON, IVOR LINDOW, "Cliff House," Sandakan, B.N. Borneo. English. Manager of Wholesale and Retail Chemists and Druggists. Member of the Pharmaceutical Society. Degree obtained in Edinburgh. Formerly Student of Chemistry at Heriot-Watt College, Edinburgh. (*Signed by*) A. W. Morgan.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BAVINK, BERNHARD. The anatomy of modern science: an introduction to the scientific philosophy of to-day. Translated from the 4th German edition by H. STAFFORD HATFIELD. London 1932. pp. xiv + 684. ill. 21*s.* net. (*Recd.* 1/11/32.)

From the Publishers: Messrs. G. Bell & Sons.

DENTAL BOARD OF THE UNITED KINGDOM. Four lectures on "Practical points connected with dental mechanics." By CHARLES

STANLEY GIBSON, WILLIAM SIMMS, WILLIAM KELSEY FRY [and others]. London 1932. pp. viii + 88. ill. (*Recd.* 3/11/32.)
From Professor C. S. Gibson, O.B.E., F.R.S.

DHAR, NIL RATAN. New conceptions in biochemistry. Allahabad 1932. pp. x + 168. (*Recd.* 7/11/32.) From the Author.

FRIEND, JOHN NEWTON. A text-book of physical chemistry. Vol. I. General properties of elements and compounds. London 1932. pp. xii + 502. ill. 24*s.* net. (*Recd.* 28/10/32.)
From the Publishers: Messrs. Charles Griffin & Co.

MARTINDALE, WILLIAM HARRISON, and WESTCOTT, WILLIAM WYNN. The extra pharmacopœia. 20th edition. Vol. I. London 1932. pp. xlviii + 1216. (*Reference.*) 27*s.* 6*d.* net.
From the Publishers: Messrs. H. K. Lewis & Co.

SOCIETY OF PUBLIC ANALYSTS and OTHER ANALYTICAL CHEMISTS. Some reminiscences of its first fifty years by BERNARD DYER, and a review of its activities by CHARLES AINSWORTH MITCHELL. Cambridge 1932. pp. viii + 278. ill. 12*s.* 6*d.* net. (*Recd.* 3/11/32.)
From Dr. Bernard Dyer.

II. *By Purchase.*

BANCO, R. Der Magnesit und seine Verarbeitung. Dresden 1932. pp. viii + 64. ill. *M.* 5.80. (*Recd.* 11/11/32.)

BRITISH PHARMACOPŒIA 1932. Published under the direction of the General Council. London 1932. pp. l + 714. (*Reference.*) 21*s.* net.

CASTELFRANCHI, GAETANO. Recent advances in atomic physics. 2 vols. Translated by W. S. STILES and JOHN W. T. WALSH. London 1932. pp. xii + 360 + 12, xii + 400 + 12. ill. 30*s.* net. (*Recd.* 20/10/32.)

DARROW, KARL KELCHNER. Electrical phenomena in gases. [Baltimore] 1932. pp. xviii + 492. ill. $8 net. (*Recd.* 20/10/32.)

EMICH, FRIEDRICH. Microchemical laboratory manual. With a section on spot analysis by FRITZ FEIGL. Translated by FRANK SCHNEIDER. New York 1932. pp. xvi + 180. ill. $3 net. (*Recd.* 20/10/32.)

FAJANS, KASIMIR. (Editor.) Elektrochemie. Part I. Leitfähigkeit und Überführungszahlen in flüssigen und festen Elektrolyten. By LUDWIG EBERT and CARL TUBANDT. Leipzig 1932. pp. xvi + 495. ill. *M.* 45. (*Recd.* 8/11/32.)

FALKENHAGEN, HANS. Elektrolyte. Leipzig 1932. pp. xvi + 346. ill. *M.* 24.80. (*Recd.* 3/11/32.)

FISCHL, VIKTOR, and SCHLOSSBERGER, HANS. Handbuch der Chemotherapie. Part I. Metallfreie organische Verbindungen. Leipzig 1932. pp. viii + 358. *M.* 29. (*Recd.* 3/11/32.)

GATTERMANN, LUDWIG. Laboratory methods of organic chemistry. Completely revised by HEINRICH WIELAND. Translated from the 22nd German edition by WILLIAM MCCARTNEY. London 1932. pp. xviii + 416. ill. 17*s*. net. (*Recd.* 22/10/32.)

HALAMA, MARTA. Transparentfolien (Cellophan, usw.). Berlin-Steglitz 1932. pp. xvi + 292 + 17 specimens. ill. *M*. 18. (*Recd.* 11/11/32.)

HEVESY, GEORG VON. Chemical analysis by *X*-rays and its applications. New York 1932. pp. xiv + 334. ill. $3 net. (*Recd.* 20/10/32.)

KIND, WALTER. Das Bleichen von Pflanzenfasern. 3rd edition. Berlin 1932. pp. vi + 340. ill. *M*. 24. (*Recd.* 8/11/32.)

KUHN, ALFRED. Wörterbuch der Kolloidchemie. Dresden 1932. pp. iv + 179. ill. (*Reference.*) *M*. 8.

LIVERSEEGE, JOHN FRANCIS. Adulteration and analysis of foods and drugs. Birmingham methods and analyses of samples. Review of British prosecutions during half a century. London 1932. pp. xvi + 600. 36*s*. net. (*Recd.* 20/10/32.)

MARK, HERMANN. Physik und Chemie der Cellulose. Berlin 1932. pp. xvi + 330. ill. *M*. 45. (*Recd.* 8/11/32.)

MEDICAL RESEARCH COUNCIL. *Special Report Series*, No. 167. Vitamins: a survey of present knowledge. London 1932. pp. 332. ill. 6*s*. 6*d*. net. (*Recd.* 22/10/32.)

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LOCAL REPRESENTATIVES.

Aberdeen. Mr. Reginald Craven, B.Sc., A.R.C.S., 2, Richmondhill Gardens, Aberdeen.

Birmingham. Dr. W. Wardlaw, F.I.C., Chemistry Department, The University, Edgbaston, Birmingham.

Bristol. Dr. E. B. Maxted, F.I.C., Chemical Department, The University, Woodland Road, Bristol.

Cambridge. Dr. Hamilton McCombie, D.S.O., M.C., M.A., The Chemical Laboratory, The University, Cambridge.

Edinburgh. Dr. Alexander Lauder, F.I.C., College of Agriculture, 13, George Square, Edinburgh.

Exeter. Professor W. H. Lewis, M.A., F.I.C., University College, Exeter.

Glasgow. Dr. W. M. Cumming, F.I.C., Chemistry Department, Royal Technical College, Glasgow.

Leeds. Mr. H. S. Patterson, B.Sc., The University, Leeds.

Liverpool. Dr. R. A. Morton, F.I.C., Chemistry Department, The University, Liverpool.

Manchester. Dr. F. Fairbrother, Chemistry Department, The University, Manchester.
Dr. E. H. Rodd, A.C.G.I., D.I.C., Cranleigh, Moss Lane, Timperley, Altrincham, Cheshire.

Newcastle and Durham. Dr. R. Raper, M.A., Chemistry Department, Armstrong College, Newcastle-on-Tyne.

North Wales. Dr. F. G. Soper, A.I.C., Chemistry Department, University College of North Wales, Bangor.

Nottingham. Dr. B. D. Shaw, Chemistry Department, University College, Nottingham.

Oxford. Mr. D. Ll. Hammick, M.A., Oriel College, Oxford.

St. Andrews and Dundee. Dr. J. L. A. Macdonald, D.S.O., Cadham, Markinch, Fife.

Sheffield. Dr. S. Glasstone, F.I.C., Chemistry Department, The University, Sheffield.

South Wales. Professor J. E. Coates, O.B.E., D.Sc., University College, Singleton Park, Swansea.

FORTHCOMING MEETINGS OF THE SOCIETY.

Thursday, December 1st, 1932, at 8 p.m.

Ordinary Scientific Meeting at which the following papers will be read :—

"The action of sodium ethoxide on itaconic, citraconic, and mesaconic esters." By E. H. COULSON and G. A. R. KON.

"The structure of glutaconic acids and esters. Part VII. Derivatives of 3-methyl*cyclo*propene-1 : 2-dicarboxylic acid." By G. A. R. KON and H. R. NANJI.

"Researches in the menthone series. Part X. The complete optical resolution of *dl*-neomenthol by means of *l*-menthol." By J. READ and W. J. GRUBB.

"The complete optical resolution of chloroiodomethanesulphonic acid." By J. READ and (MISS) A. M. MCMATH.

"The rotatory dispersion of organic compounds. Part XX. Rotatory dispersion and circular dichroism of camphor-β-sulphonic acid in the region of absorption." By T. M. LOWRY and (MISS) H. S. FRENCH.

"The rotatory dispersion of organic compounds. Part XXI. The rotatory dispersion and circular dichroism of aldehydic sugars." By T. M. LOWRY and H. HUDSON.

Thursday, December 15th, 1932, at 8 p.m.

Discussion on "The Chemistry of the Sterols and Bile Acids" to be opened by Professor I. M. Heilbron, D.S.O., F.R.S.

Friday, December 16th, 1932, at 5 p.m.

Extraordinary General Meeting to consider certain alterations in the Bye-Laws proposed by the Council.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Extra Meeting held in the Medical Lecture Theatre of the University of Birmingham on Friday, November 25th, 1932, at 5.30 p.m., the Chair being taken, in the absence of the President, by Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President.

The CHAIRMAN welcomed the visitors present and stated that letters of apology had been received from the Vice-Chancellor, Professor S. W. J. Smith, F.R.S., and Professor S. J. Wills.

Messrs. R. H. Hopkins, S. R. Carter, J. Cooper Duff, George King, R. J. W. Reynolds, Allan C. Waine, and Reece H. Vallance were formally admitted as Fellows of the Society.

Dr. F. W. Aston then delivered the Fourth Liversidge Lecture, entitled "Physical Atomic Weights." At the conclusion of the lecture, a Vote of Thanks, proposed by Professor W. N. Haworth and seconded by Professor G. T. Morgan, was passed with acclamation and acknowledged by the Lecturer.

A Vote of Thanks to the Senate of the University for receiving the Society, proposed from the Chair and seconded by Professor C. S. Gibson, was carried unanimously.

Ordinary Scientific Meeting, Thursday, December 1st, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Spencer Mort	June 21st, 1928.	Nov. 20th, 1932.
Charles Maddock Stuart	May 7th, 1885.	Nov. 22nd, 1932.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Lancelot Salisbury Bagster, Prof., D.Sc., The University, Brisbane, Queensland, Australia.

David Mark Cowan, B.Sc., A.R.C.S., 121, Herbert Road, Plumstead, S.E. 18.

Eric George Cowley, B.Sc., 4, Walsingham Road, Enfield, Middlesex.
John Owen Edwards, B.Sc., 90, Anerley Park, S.E. 20.
Sidney Frank Haydon, Holland House, Holland Road, Hornsey, N. 8.
Max Hutchinson Hey, B.A., B.Sc., 18, Holmdene Avenue, North Harrow, Middlesex.
Leslie Alfred Hughes, B.Sc., A.R.C.S., 393, Bromley Road, Catford, S.E. 6.
Takeo Ishiguro, 707, 2-chome Daita, Setagaya-ku, Tokyo, Japan.
John George Knight, B.Sc., 41, Park Drive, Winchmore Hill, N. 21.
Harold Lowe, M.Sc., F.I.C., The Poplars, Park West, Keswall, Cheshire.
Harry Work Melville, Ph.D., 18, Kirkhill Gardens, Edinburgh.
George Harry James Neville, B.A., 14, Leys Avenue, Cambridge.
Jawher Lalchand Panjabi, B.Sc., 21, Rosslyn Hill, Hampstead, N.W. 3.
Gordon James Pritchard, B.Sc., 14, Craven Hill Gardens, Lancaster Gate, W. 2.
William Charles Victor Rosney, Ph.D., 44, Moss Lane, Walton, Liverpool.
Abraham Shannon, B.A., New College, Oxford.

Dr. R. J. W. Le Fèvre and Mr. A. J. Stevenson were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared duly elected as Fellows:

Ronald Percy Bell, B.A., B.Sc.
Desmond Cannon Brookes, B.A.
Arnold Blatchford David Cassie, M.A., Ph.D.
Walter Clarke, B.Sc.
Frank Chester Cochrane.
Kathleen Culhane, B.Sc.
Ronald Cuthill, M.Sc., Ph.D.
David Gwynne Davies, B.Sc., Ph.D.
Venancio Deulofeu (Dr.).
John Leonard D'Silva, B.Sc., Ph.D.
Kenneth Walter Francombe.
Bertram Garforth, B.Sc., Ph.D.
Leonard Arthur Haddock, B.Sc., A.I.C.
Henry William Headland, B.Sc.
Colin Leslie Hewett, M.Sc.
Henry Mark Hutton.
Hywel Oliver Jenkins, B.Sc., Ph.D.
Clarence Jephcott, M.A., Ph.D.
Shiam Sunder Joshi, D.Sc.
Rolfe Fairbank Kirby, B.Sc.
Edwin Charles Higgins Lawrence, B.Sc., A.R.C.S.
Edmund Joseph Leeming, M.A.
David Thomas Lewis, B.Sc.
Charles Frederick Linnitt, B.Sc.
John MacArthur, M.A., B.Sc., Ph.D.
Geoffrey Milne, M.Sc.
Henry Brewer Milner, M.A., D.I.C.
Koovelimadam Rama Narayana Iyer, B.A., M.Sc.
Arthur Charles Cecil Newman, B.Sc., A.R.C.S.
Hugh Bryan Nisbet, B.Sc., F.I.C.
John Pearson, B.Sc.
Bhartípudy Srinivasa Vira Raghava-Rao, B.A., M.Sc.
Thelma Muriel Reynolds, M.Sc.
Joseph Harry Roberts.
Ivor Lindow Robson.
William George Sheppard.
Frederick Rowlandson Snell, B.A., B.Sc.
John Samuel Wignall, B.Sc., Ph.D.
Ralph James Wilkins, B.Sc.

The following papers were read:

"The action of sodium ethoxide on itaconic, citraconic, and mesaconic esters." By E. H. Coulson and G. A. R. Kon.

"The structure of glutaconic acids and esters. Part VII. Derivatives of 3-methyl*cyclo*propene-1 : 2-dicarboxylic acid." By G. A. R. Kon and H. R. Nanji.

"The rotatory dispersion of organic compounds. Part XX. Rotatory dispersion and circular dichroism of camphor-β-sulphonic acid in the region of absorption." By T. M. Lowr and (Miss) H. S. Faench.

"Researches in the menthone series. Part X. The complete optical resolution of *dl*-neomenthol by means of *l*-menthol." By J. Read and W. J. Grubb.

"The complete optical resolution of chloroiodomethanesulphonic acid." By J. Read and (Miss) A. M. McMath.

Ordinary Scientific Meeting, Thursday, December 15th, 1932, at 8 p.m., Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., Past-President, being in the Chair, owing to the absence of the President, through illness.

The following were formally admitted Fellows of the Chemical Society: J. Pearson, P. C. Young, A. C. Bottomley, C. L. Hewett, A. J. Stevenson, and D. Richter.

Forms of Recommendation for Fellowship were read for the first time in favour of:

Antonio Garcia Banús, Prof., Dr., Plaza Trilla 4, Barcelona.
Samuel Francis Boys, B.Sc., A.R.C.S., 643, Fulham Road, S.W. 6.
Arthur Herbert Cook, A.R.C.S., 16, Kynaston Road, Stoke Newington, N. 16.
Samuel Evans, M.Sc., 15, Elm Grove, Aberdare.
Eli Finklestone, 24, Greek Street, London Road, Liverpool.
John Leslie Gleave, 14, Camden Square, N.W. 1.
Andrew McLean, Ph.D., 42, Spittalfields Road, Inverkeithing.
William John Ray, B.Sc., A.R.C.S., 59, Portland Road, Rugby.
George Reginald Rigby, Ph.D., A.R.C.S., 90, Campbell Road, Stoke-on-Trent.
Eric Arthur Houghton Roberts, B.A., B.Sc., 35/II lks, Kaulbachstrasse, München.
James Charles Edward Simpson, Ph.D., 27, Seabank Road, Wallasey.
Hermann, Staudinger, Prof., Goethestrasse 4, Freiburg.

The following form of recommendation has been accepted by the Council under Bye-Law I (2):

Walther Rimaraki, Ph.D., Chemisch-Technischen Reichsanstalt, Berlin.

A discussion on "The Chemistry of the Sterols and Bile Acids" was opened by Professor I. M. Heilbron and continued by Professor T. M. Lowry, Dr. J. D. Bernal, Professor R. Robinson, Dr. O. Rosenheim, and Dr. N. K. Adam.

Extraordinary General Meeting, Friday, December 16th, 1932, at 5 p.m.

In the absence of the President, through illness, the Chair was

taken by Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President.

The notice convening the meeting was read announcing that the following alterations in the Bye-Laws had been proposed by the Council :

I. Bye-Law I (Of the Election and Admission of, and Payments by, Fellows).

(*a*) *Page* 4, *paragraph* 2, the first part of which at present reads :

"The amount of the admission fee, if any, payable on election to Fellowship, and the amount of the annual subscription and of the life composition fee shall be determined by the Council from time to time subject to confirmation by an Extraordinary General Meeting of the Society : Provided that the Council shall have power without such confirmation either wholly to remit or to reduce the admission fee, or to permit its payment by instalments extending over a term of years or otherwise, whenever it may consider it desirable to do so. And provided further that the Council shall have power, without such confirmation, in the case of any person who has been a Fellow for not less than 40 years, wholly to remit or to reduce the annual subscriptions thereafter payable by him whenever it may consider it desirable to do so."

to be altered by adding at the end of such part the following :

" and provided further that the Council shall have power without such confirmation to reduce (by not more than one-half thereof) the annual subscription payable by any Fellow who, at the date when such annual subscription becomes payable, is under 25 years of age and who is willing to forego the receipt of certain of the publications of the Society issued to Fellows as hereinafter provided."

(*b*) *Page* 5, *paragraph* 2, the first part of which at present reads :

" Every Fellow shall have the right to be present and to vote at all meetings of the Society, and to propose Candidates for admission into the Society, and he shall be entitled, so long as his annual subscription be not in arrear, or shall not have been remitted or reduced under the provision hereinbefore contained, to one copy of the *Journal* and of such other publications of the Society as the Council may determine."

to be altered by adding at the end of such part the following :

"provided that any Fellow under 25 years of age paying a reduced annual subscription as aforesaid shall forego the receipt of such of the publications of the Society as the Council may determine."

II. Bye-Law III (Of the Resignation and Readmission of Fellows), which at present reads :

"Except in special circumstances determined by the Council, the resignation of any Fellow shall be accepted only after payment of all moneys due from him to the Society. Any person, whose resignation from the Fellowship has been duly accepted, may present to the Council a request for readmission. The case of such a person shall then be considered by the Council, which may, if it sees fit, reinstate him as a Fellow. He shall be entitled to receive the publications of the Society issued to Fellows since the date of resignation, and still in print, upon payment of all annual subscriptions due since that date,"

to be altered by adding after the word "entitled" (line 8 of the Bye-Law as printed above) the following :

"(subject to any determination of the Council under Bye-Law I)."

III. Bye-Law X (Of the Secretaries), which at present reads :

"There shall be two Secretaries and a Foreign Secretary. Among the duties of the Secretaries shall be : 1st. To attend, one or both, at all Meetings of the Society and of the Council; 2nd. To take minutes of the proceedings and to read them at the ensuing Meeting; 3rd. To address to every newly elected Fellow a copy of Letter No. 2 in the Appendix, together with a copy of the Obligation and of the Bye-Laws of the Society; 4th. To intimate to all Fellows ordinarily resident in the United Kingdom the dates on which the Society holds its Meetings during the Session; 5th. To prepare and circulate the Ballot Papers for the election of the Council; 6th. To conduct the correspondence of the Society.

The several duties to be performed by each Secretary shall be arranged by the Council.

The Foreign Secretary shall conduct the foreign correspondence of the Society.

Each Secretary shall hold office until a successor has been appointed."

to be altered by

(*a*) Deleting the first sentence, and substituting therefor the following :

"There shall be such number of Secretaries (but not less than two) as the Council shall from time to time determine having regard to the extent and nature of the duties the Secretaries are called upon to perform, of whom one may be designated as 'Foreign Secretary' by the Council."

(*b*) Substituting in line 3 of the Bye-Law as printed above the word "more" for the word "both."

(*c*) Deleting the last two paragraphs (lines 16 to 19 of the Bye-Law as printed above) and substituting therefor the following :

"Each Secretary whose appointment shall take effect in or after 1933 shall vacate the office of Secretary after he shall have held office for six years and shall not be eligible for re-election as Secretary until after the lapse of one year."

IV. Bye-Law XIII (Of Committees).

Page 14, *paragraph* 1, which at present reads :

"The following shall be included among the Committees : Finance Committee, House Committee, Library Committee, Publication Committee, and Research Fund Committee,"

to be altered by inserting after the word "Finance" the words "and General Purposes" and deleting the words "House Committee."

V. Appendix No. 1 (Form of Recommendation).

Add after the words "in J.C.S." the following paragraph :

"If the candidate be under 25 years of age the following further particulars are required :

Date of birth.....

Whether desirous of paying reduced subscription and thereby foregoing right to receive certain publications....."

The proposed alterations in the Bye-Laws were considered separately, and on being put to the meeting from the Chair were unanimously adopted.

The Council has made the following grants from the Research Fund :

	£	s.	d.
Catalytic activity of hydrochloric acid in non-aqueous solvent. H. W. Ashton. (E. Lond. Coll.)	7	10	0
Synthesis of derivatives of polyhydroxybenzenes. W. Baker. (Oxford Univ.)	10	0	0
Heterogeneous addition to unsaturated cyclic acids. E. J. Boorman. (Imperial Coll.)	8	10	0
Constitution of sesquiterpenes and their derivatives. A. E. Bradfield. (Univ. Coll., Bangor)	12	0	0
Kinetics of formation and physical properties of free radicals. L. F. Broadway. (Cambridge Univ.)	14	0	0
Adsorption of fatty acids from very dilute solutions by silicic acid gel. G. Broughton. (E. Lond. Coll.)	10	0	0
Adsorption of vapours and gases by porous solids. L. J. Burrage. (King's Coll.)	5	0	0
Synthesis and investigation of cannabinol and related substances. R. S. Cahn. (Univ. Coll., Bangor)	15	0	0
Investigation of spreading coefficients. E. G. Carter. (E. Lond. Coll.)	10	0	0
Isomeric change of aromatic compounds (*cont'd.*). A. W. Chapman. (Sheffield Univ.)	10	0	0
Solubility and electric conductivity of salts in anhydrous hydrogen cyanide (*cont'd.*). J. E. Coates. (Univ. Coll., Swansea)	17	0	0
Synthesis of fused-ring systems. A. H. Cook. (Imperial Coll.)	8	10	0
Influence of some substituents on chemical and physical properties of organic compounds. D. M. Cowan. (Woolwich Polytechnic)	12	0	0
Dielectric polarisation. E. G. Cowley. (E. Lond. Coll.)	5	0	0
Investigations in the diphenylene oxide series. N. M. Cullinane. (Univ. Coll., Cardiff)	10	0	0
Lichen acids. F. H. S. Curd. (Lond. Sch. of Hygiene)	15	0	0
Effect of the constitution of isomeric aliphatic alcohols on their mutual solubility. J. O. Edwards. (E. Lond. Coll.)	10	0	0
Substituted dibasic acids. K. K. Etchells. (Woolwich Polytechnic)	12	0	0
Hydrogenation of conjugated compounds. R. A. E. Galley. (Imperial Coll.)	8	10	0
Michael reaction in relation to acetylenic compounds. S. C. Ghosal. (Imperial Coll.)	8	10	0
Concentration cells of lithium bromide in absolute ethyl alcohol. J. Glassman. (E. Lond. Coll.)	7	10	0
Diamagnetic study of ureas. F. W. Gray. (Aberdeen Univ.)	10	0	0
Optical properties of some aromatic nitro-compounds. N. H. Hartshorne. (Univ. Coll., Swansea)	5	0	0
The pinacol–pinacolin rearrangement. H. H. Hatt. (E. Lond. Coll.)	12	0	0
Experiments in hydroaromatic series. R. D. Haworth. (Armstrong Coll.)	12	0	0
Stereochemistry of some mixed β-tetrammines. F. S. H. Head. (E. Lond. Coll.)	9	0	0

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Influence of ultra-violet radiation on unsaturated fatty acids. F. W. Hodges. (Chelsea Polytechnic)	7	10	0
Behaviour of polyene systems towards catalytic reduction. L. A. Hughes. (Imperial Coll.)	7	0	0
Oxidising halogen in organic compounds. L. Hunter. (Univ. Coll., Leicester)	5	0	0
Cytisine and related alkaloids. H. R. Ing. (Univ. Coll., Lond.)	10	0	0
Isomerisation of dekalin. R. L. Jones. (Imperial Coll.) ...	7	10	0
Investigation of organo-metallic compounds (*cont'd.*). W. J. Jones. (Univ. Coll., Cardiff)	7	0	0
Synthesis of bases allied to strychnine and brucine. F. E. King. (Oxford Univ.)	15	0	0
An investigation of some simple substituted glutaconic acids. E. C. H. Lawrence. (Imperial Coll.)	8	10	0
Solvation of polyhalides. J. H. Martin. (Imperial Coll.) ...	5	0	0
Additive capacities of olefinic and polyene systems. S. R. W. Martin. (Imperial Coll.)	7	10	0
A study of semi-pinacolinic deamination. A. K. Mills. (Aberdeen Univ.)	10	0	0
Photosynthesis of HCl. R. B. Mooney. (Cambridge Univ.) ...	12	0	0
Acid catalysts in three-carbon tautomerism. K. S. Nargund. (Imperial Coll.)	7	10	0
Chlorine-sensitised photochemical decomposition of ozone. G. H. J. Neville. (Cambridge Univ.)	6	0	0
(*a*) Synthesis of homocaronic acid. (*b*) Resolution of *trans-dl*-caronic acid. J. Owen. (Univ. Coll., Bangor)	5	0	0
Constitution of β-phenylated glutaconic acids and esters. J. L. Panjabi. (Imperial Coll.)	7	10	0
Studies in oxides of iron, cobalt, and nickel. M. Prasad. (Roy. Inst. of Science, Bombay)	15	0	0
(*a*) Rotenone and its derivatives. (*b*) Glucosides. A. Robertson. (Lond. Sch. of Hygiene)	20	0	0
Influence of poles in the simple three-carbon system (*cont'd.*). E. Rothstein. (Leeds Univ.)	12	0	0
Preparation and properties of large-ring lactones. H. N. Rydon. (Imperial Coll.)	7	10	0
Preparation and dissociation constants of cyano-acids. K. Sams. (Imperial Coll.)	7	10	0
Anthelmintic Drugs. W. F. Sandrock. (Lond. Sch. of Hygiene)	12	0	0
Molecular constitution and molar heat of chlorination of organic compounds. F. G. Soper. (Univ. Coll., Bangor)	10	0	0
Theory of strong electrolytes, with special reference to the question of complete ionisation. H. I. Stonehill. (E. Lond. Coll.)	10	0	0
(*a*) Thermal and catalytic decomposition of substituted dibasic acids (*cont'd.*). (*b*) Isolation of strainless forms of the *cyclo*hexane and substituted *cyclo*hexane rings (*cont'd.*). A. I. Vogel. (Woolwich Polytechnic)	15	0	0
Kinetics of explosions. J. Wallace. (Cambridge Univ.) ...	10	0	0
Dissociation constants of acids. R. J. Wilkins. (E. Lond. Coll.)	8	0	0
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ANNUAL REPORTS.

Fellows are reminded that applications for the Annual Reports for 1932, Volume XXIX, at 5*s*. 6*d*. per copy must be received by January 16th, 1933.

THE INSTITUTE OF FUEL.

A meeting of the Institute of Fuel will be held in the Rooms of the Chemical Society on Wednesday, January 11th, 1933, at 6 p.m., when a paper will be read entitled

"The Manufacture of Organic Products from Coke Oven Gas," by T. E. OESTERRIETH and G. DESCAMPS.

Fellows of the Chemical Society are cordially invited to attend the meeting, and advance proofs of the paper can be obtained from the Secretary, The Institute of Fuel, 53, Victoria Street, S.W. 1

List of Papers, or abstracts thereof, received between November 17th and December 15th, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

"Physico-chemical studies of complex formation involving weak acids. Part VI. Alkali solutions of thorium tartrate." By H. T. S. BRITTON and W. E. BATTRICK.

"Colour reactions of naphthaquinones." By A. B. BECK, A. K. MACBETH, and F. L. WINZOR.

"Physico-chemical studies of complex acids. Part IX. Tantalic acid." By H. T. S. BRITTON and R. A. ROBINSON.

"Researches in the menthone series. Part XI. A contribution to the diagnosis and characterisation of the stereoisomeric menthols." By J. READ, W. J. GRUBB, and D. MALCOLM.

"New derivatives of *p*-arsanilic acid. Part IV. *p*-Arsonoadipanilic acid and related compounds." By G. T. MORGAN and E. WALTON.

"The formula of hypophosphoric acid." By F. BELL and S. SUGDEN.

"A new volumetric method for the estimation of dithionates." By S. GLASSTONE and A. HICKLING.

"Applications of thallium compounds in organic chemistry. Part IX. Changes observed on replacing dialkylthallium by trimethylplatinum in chelate rings." By R. C. MENZIES and E. R. WILTSHIRE.

"Ternary liquid systems. Part I. A study of the solubility of certain chlorine substituted hydrocarbons in water–acetone mixtures." By J. HUNTER and J. K. WOOD.

"Some new substituted glucosides." By (MISS) T. M. REYNOLDS.

"Studies of the boron–carbon linkage. Part III. The nitration of phenylboric acid." By A. D. AINLEY and F. CHALLENGER.

"Cryoscopic studies and activities. The dissociation of pyridine *o*-chlorophenoxide in benzene." By H. M. GLASS and W. M. MADGIN.

"The isomeric (−)menthyl α-naphthyl glycollates." By A. MCKENZIE and (MISS) E. R. L. GOW.

"Derivatives of methylene-blue." By H. D. K. DREW and F. S. H. HEAD.

"An improved crucible support." By E. G. RADLEY.

"Studies on alkylated complex cyanides. Part I. The isomerism of the alkylated ferrocyanides. Part II. Hexaethylated ferrocyanides." By E. G. J. HARTLEY and H. M. POWELL.

"The ternary systems constituted by mercuric chloride and water in conjunction with an alkaline-earth chloride or cupric chloride." By H. BASSETT, G. W. BARTON, A. R. FOSTER, and C. R. J. PATEMAN.

"A mode of studying nitration." By J. A. HETHERINGTON and I. MASSON.

"The hydrolysis of salts of the halogen-substituted aliphatic acids in aqueous solution." By H. M. DAWSON and N. B. DYSON.

"Podophyllotoxin." By A. ROBERTSON and R. B. WATERS.

"Monothioethylene glycol. Part IV. Aryl-β-hydroxy- and β-chlorosulphides." By G. BADDELEY and G. M. BENNETT.

"The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part VI. Aromatic side-chain and nuclear reactivity." By G. BADDELEY and G. M. BENNETT.

"Electrometric studies of the precipitation of hydroxides. Part VIII. Standardisation of acid solutions by means of mercuric oxide." By H. T. S. BRITTON and (MISS) B. M. WILSON.

"Tricarbocyanines." By (MISS) N. I. FISHER and (MISS) F. M. HAMER.

"Note on the preparation of ethyl β-iodopropionate." By J. W. BAKER.

"Studies in dielectric polarisation. Part V. Benzene solutions of pyrones, thiopyrones, and thioketones. Dioxan solutions of ureas and thioureas." By E. C. E. HUNTER and J. R. PARTINGTON.

"Natural and synthetic indican." By A. ROBERTSON and R. B. WATERS.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part X. Formation and decomposition of dibenzyldiallylammonium hydroxide." By L. Hey and C. K. Ingold.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part XI. Decomposition of quaternary ammonium hydroxides containing the *tert*-butylcarbinyl group." By C. K. Ingold and C. S. Patel.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part XII. Decomposition of quaternary ammonium alkoxides." By C. K. Ingold and C. S. Patel.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part XIII. Decompositions of some quaternary ammonium salts containing the methyl, benzyl, and benzhydryl groups." By E. D. Hughes and C. K. Ingold.

"Influence of poles and polar linkings on the course pursued by elimination reactions. Part XIV. The action of tertiary amines on triphenylmethyl halides." By E. D. Hughes.

"A contribution to the relationship of structure to the photographic developing properties (developing function) of compounds of the naphthalene series." By R. B. Forster and H. T. Hanson.

"Primary photochemical processes. Part II. The absorption spectrum and photochemical decomposition of diazomethane." By F. W. Kirkbride and R. G. W. Norrish.

"Experiments on the synthesis of cyanomaclurin and its derivatives. Part I. Dihydrocyanomaclurin pentamethyl ether." By A. L. Bhalla and J. N. Ray.

"The configurations of the aldoximes from measurements of electric dipole moment." By T. W. J. Taylor and L. E. Sutton.

"The interaction of carbon monoxide and nitric oxide." By F. F. Musgrave and C. N. Hinshelwood.

"The synthesis of tartaric acid." By A. C. C. Newman and H. L. Riley.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

Hedges, Ernest Sydney. Chapters in modern inorganic and theoretical chemistry. London (1932). pp. viii + 279. ill. 12*s*. 6*d*. net. (*Recd*. 21/11/32.)

From the Publishers: Messrs. Edward Arnold & Co.

—— Liesegang rings and other periodic structures. London 1932. pp. viii + 122. ill. (Second copy.)

From Mr. Emil Hatschek.

TINKLER, CHARLES KENNETH, and MASTERS, HELEN. Applied chemistry. A practical handbook for students of household science and public health. 2nd edition. Vol. II. London 1932. pp. xii + 284. ill. 15*s*. net. (*Recd*. 25/11/32.) From the Authors.

II. *By Purchase.*

ANNUAL REVIEW OF BIOCHEMISTRY. Vol. I. Edited by JAMES MURRAY LUCK. Stanford 1932. pp. viii + 724. ill. (*Reference*.) $5.

FARADAY, MICHAEL. Diary: being the various philosophical notes of experimental investigation during the years 1820—1862 and bequeathed by him to the Royal Institution of Great Britain. Edited by THOMAS MARTIN. Vols. I and II. London 1932. pp. xxviii + 430, xviii + 468. ill. (*Reference*.) Subscription price 36*s*. per vol.

RUPE, HANS. Adolf von Baeyer als Lehrer und Forscher. Erinnerungen aus seinem Privatlaboratorium. (Sammlung, N.F. Heft. 15.) Stuttgart 1932. pp. 26.

SALMONY, ALFRED. Über das Trockeneis, seine Herstellung, Verwendung und wirtschaftliche Bedeutung. (Sammlung, N.F. Heft 16.) Stuttgart [1932]. pp. 61. ill.

SCHLENK, WILHELM, and BERGMANN, ERNST. Ausführliches Lehrbuch der organischen Chemie. Vol. I. Leipzig 1932. pp. viii + 806. ill. *M*. 36. (*Recd*. 5/12/32.)

III. *Pamphlets.*

CHARLTON, JAMES. Single value soil properties of tropical soils. (From the *Indian J. Agric. Sci*., 1932, **2**.)

INDIA. *Society of Biological Chemists*. Some aspects of plant nutrition. By B. VISWA NATH. (Bangalore) 1932. pp. 39.

—— —— Symposium on "The rôle of organic matter in soil." (Bangalore) 1932. pp. 14.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Two lectures on an "Outline of an electrochemical (electronic) theory of the course of organic reactions." By ROBERT ROBINSON. London 1932. pp. 52.

KOGERMAN, PAUL NICOLAI. On the chemistry of the Estonian oil shale "Kukersite." A monograph. (From the *Arch. Naturkunde Estlands*, 1931, [i], **10**.)

MILLARD, EDGAR JAMES. Notes on the British Pharmacopœia 1932. London [1932]. pp. 44.

NATIONAL JOINT INDUSTRIAL COUNCIL FOR THE FLOUR MILLING INDUSTRY. Technical Education Series. Pamphlet No. 9. The wheats of commerce. I. General considerations. By ERNEST ARTHUR FISHER and CHARLES ROBERT JONES. London 1932. pp. 51. ill.

NESFIELD, VINCENT. Viscosity of the blood and its bearing on high blood pressure in the absence of renal disease. London [n.d.]. pp. 19.

RICHTER, DEREK. On the application of the chain reaction theory to biochemical processes. Oxford 1932. pp. 8.

SINGH, DALIP, and NIJHAWAN, SUKH DAYAL. A study of the physico-chemical changes accompanying the process of reclamation in alkali soils. (From the *Indian J. Agric. Sci.*, 1932, **2**.)

UNITED STATES. *Department of Agriculture.* Technical Bulletin No. 276. The fractionation of American gum spirits of turpentine and evaluation of its pinene content by optical means. By S. PALKIN. Washington 1932. pp. 13. ill.

UNITED STATES. *Department of Agriculture.* Technical Bulletin No. 291. The effect of air drying on the hydrogen-ion concentration of the soils of the United States and Canada. By ERNEST H. BAILEY. Washington 1932. pp. 43. ill.

—— —— Food and Drug Administration. Service and Regulatory Announcements. Food and Drug No. 2. (Second Revision.) Definitions and standards for food products. Washington 1931. pp. 19.

—— *Department of Commerce.* Bureau of Mines. Bulletin 333. Refining of light petroleum distillates. By H. P. RUE and RALPH H. ESPACH. Washington 1930. pp. vi + 111. ill.

—— —— Bureau of Standards. Miscellaneous Publication No. 118. The optical rotation of liquids, its variation with wave length, temperature, solvent, and concentration. By THOMAS MARTIN LOWRY. Washington 1932. pp. iv + 106.

UNIVERSITY OF ILLINOIS. *Agricultural Experiment Station.* Bulletin 369. Vitamin-B and vitamin-G content of cereals. By ROSSLEENE ARNOLD HETLER, CLARA ROCKE MEYER, and DOROTHY HUSSEMANN. Urbana 1931. pp. ii + [45]. ill.

UPTHEGROVE, C., and HERZIG, A. J. The effect of the products of combustion on the shrinkage of metal in the brass industry. (*Univ. Michigan Eng. Research Bull.*, No. 22.) Ann Arbor 1931. pp. vi + 66. ill.

VLES, SIMON ERICH. Bepaling van de hydrolysesnelheid van zuuranhydriden met behulp van de anilinewatermethode. 's-Gravenhage 1932. pp. xii + 148.

VOEGTLIN, CARL, JOHNSON, J. M., and ROSENTHAL, SANFORD M. The catalytic action of copper in the oxidation of crystalline glutathione. (From the *U.S. Public Health Reports*, 1931, **46**.)

YAMAFUJI, KAZUO. Über zwei neue Glykoside der Tabakblätter. (I). Über die chemischen Bestandteile des Tabaks. II. (From the *Bull. Agr. Chem. Soc. Japan*, 1932, **8**.)

MEETINGS OUTSIDE LONDON.

Birmingham. After the Fourth Liversidge Lecture, entitled "Physical Atomic Weights," by Dr. F. W. Aston, F.R.S., on November 25th, an informal dinner was held at the Queen's Hotel, and was presided over by Professor W. N. Haworth. The health of the Lecturer was proposed by Professor C. S. Gibson, and Professor G. T. Morgan expressed thanks to Dr. W. Wardlaw for his services, as local representative, in arranging the meeting and dinner.

The thanks of the Council have been conveyed to Dr. F. W. Aston, and also to the Senate of the University of Birmingham and Dr. W. Wardlaw.

Liverpool. Fellows are reminded that the Ostwald Memorial Lecture will be delivered by Professor F. G. Donnan, C.B.E., F.R.S., in the Chemistry Lecture Theatre of the University of Liverpool, on Friday, January 27th, 1933, at 6 p.m.

The presence of visitors will be welcomed.

FORTHCOMING MEETINGS OF THE SOCIETY.

Thursday, January 19th, 1933, *at* 8 *p.m.*

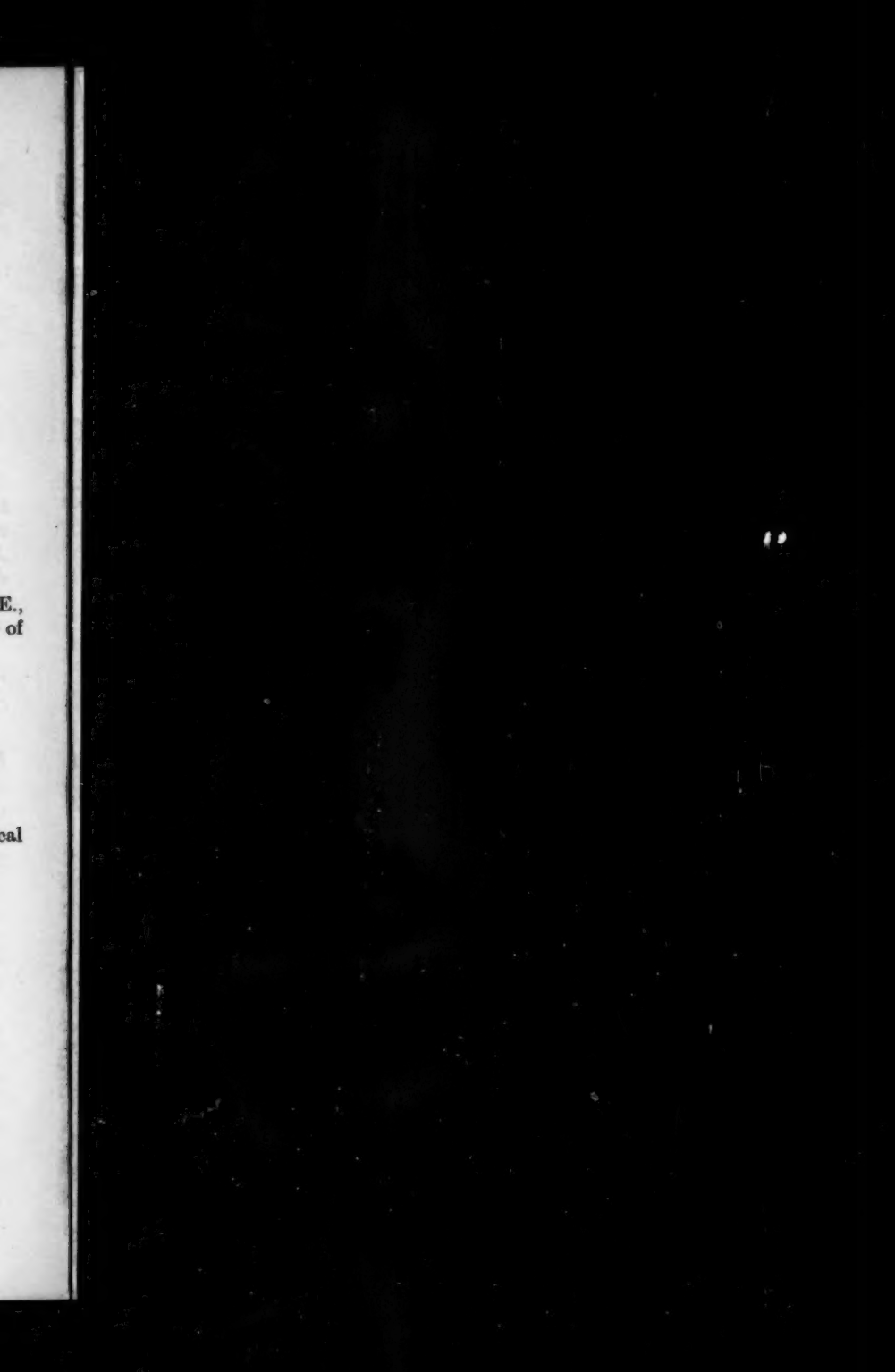
Ordinary Scientific Meeting.

Friday, January 27th, 1933, *at* 6 *p.m.*

Ostwald Memorial Lecture, by Professor F. G. Donnan, C.B.E., F.R.S., in the Chemistry Lecture Theatre of the University of Liverpool.

Thursday, February 2nd, 1933, *at* 8 *p.m.*,

Ordinary Scientific Meeting.

Thursday, February 16th, 1933, *at* 8 *p.m.*

Discussion on "The Raman Effect in Relation to some Chemical Problems," to be opened by Dr. J. J. Fox, O.B.E.